

A Case Study of a High Functioning Autistic Female in a Games Setting

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Abstract

This study determined whether or not a high functioning autistic girl can develop game structure strategies that may allow her to become an active participant in a game or sport environment. This qualitative case study involved the in-depth observation and description of one high functioning autistic student whose experience in a game setting would be studied. The type of case study carried out was a combination of descriptive and evaluative. This experience was investigated through structured, individual programming. Through on-site observation, journal entries, and hands on instruction, I was able to describe what progress the autistic student made in terms of skill development. The results of the study demonstrated that a high-functioning autistic female has the potential to develop the necessary motor skills to participate in the chosen sport of basketball. The observation results and field notes contributed to a movement profile which described her habits of body. Teaching strategies and frameworks utilized during the study were described and listed. Insights and commentary are further provided. A thorough examination of autism and games programming is provided in the literature review.

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CHAPTER ONE

Introduction

I believe Jane and I first met during the Saturday morning Brock University Children's Movement program in 1994. Jane is autistic and her behaviors were accurate with the description of the condition. Jane knew she was autistic and certainly used it to her advantage. Immediately from the beginning, I had realized that Jane was quite unique in her own unusual way. For example, very few 10-11-year-olds stand in at approximately 5 feet 9 inches and weigh in at about 160 pounds. That wasn't a soft 160 pounds, but it was a firm 160. Jane was an extremely challenging student to work with and instruct. Jane's behaviors were a test for all instructors and peer helpers to deal with. My experience with Jane and the other students with disabilities helped me develop into a more effective and creative teacher.

Jane is described as a high-functioning autistic female. Autism is a developmental disability which manifests itself in several ways: poor social interaction, lack of communication, and repetitive, stereotypical behaviors. Symptoms can range in severity from mild to severe. There is no objective measure of how severe the autism is in an individual; however, the expression of characteristics will determine the label placed on the autistic child. For example, those autistic individuals who demonstrate qualities such as being nonverbal, avoiding social interaction, and engaging in abusive stereotypical behaviors can be classified as low functioning. On the other hand, a high-functioning autistic individual can be described as having no gross impairment in communication skills, possessing good verbal skills, attempting to engage in social interaction, desiring friendships, age-appropriate motor skills, has an awareness that

he/she is different, and has reached various independent markers in life, such as control of bowel movements. Jane is a verbal autistic child who enjoys social interaction and does not engage in any self-abusive behaviors. Jane's characteristics are accurate with the above description of a high-functioning individual. Therefore, I feel she can be described as high functioning.

The work between Jane and me continued for several years and into the summer of 1996, where we were both involved in the Brock Summer Sports School. It was from this environment that the groundwork for my research project evolved. Jane was enrolled for 2 weeks and had the opportunity to participate in many sports. Jane enjoyed participating in various sports, especially basketball. Basketball is one sport in which she achieved a high level of success. Jane demonstrated a high level of comfort with most of the groups with which she worked. However, Jane's level of engagement varied depending on her mood and anxiety level. Therefore, outside variables affected her interaction on a daily basis. Following our time spent together, it would be a fair assessment to describe our relationship as positive. The 2 weeks of daily training helped refine some of the various sport skills she participated in.

Following the completion of sport school, Jane's mother made an initial suggestion of completing a research project with Jane in the area of sport skill development. Jane's mother hoped that sports could become a small piece of her daughter's life. Sports may provide her with the nonthreatening environment which she can enjoy and in which she can participate. The confusing everyday world in which the autistic student finds him/herself may be lost for those few seconds or minutes when he/she engages in sports.

As a graduate student who was completing his course work and was looking for a research project, this proposition seemed interesting. Moreover, due to my exposure to physical education during my undergraduate degree, as well as my abundance of

experience in a sports environment, I felt this project was a good fit for me. After little debate, I decided to complete my research project with Jane in the area of sport skill development. The obvious benefits of this project could not only aid Jane and her future instructors, but also help refine my teaching skills.

The study determined whether or not a high-functioning autistic girl can develop game structure strategies that may allow her to become an active participant in a game or sport environment. This experience was investigated through structured, individual programming. The study attempted to examine Jane's participation in a variety of sports, such as basketball, soccer, and hockey. The autistic student had a university graduate student completing the programming, on a one-to-one basis. I, as the researcher and instructor, modified and completed activities which were set out by the school physical education instructor. Integration with other classmates were an additional goal of the study. Integration allowed me to observe the interaction of the autistic student with other students. Furthermore, I assessed the effects of incorporating social stories into the learning environment.

Background of the Problem

Autism is a severe, lifelong developmental disability appearing during the first 3 years of life. Sherrill (1998) describes autism as a severe, lifelong developmental disability that is diagnosed by abnormal functioning, with onset before age 3, in social interaction, language as used in social communication, imaginative or social imitative play, repetitive, stereotyped patterns of behavior. A child is diagnosed autistic if he or she displays specific characteristics outlined in the Diagnostic and Statistical Manual of Mental Disorders (DSM; American Psychiatric Association, 1994). Even though much research has been completed in the areas of social, cognitive, and communication

deficits or skills, little work has been done in the area of games programming for the autistic student. Meaningful, rather than compulsory, participation within a physical education class is the goal that instructors should aim for. It is unfortunate that few autistic students have the opportunity to develop and refine game skills to a level where they can participate successfully in a game scenario. The special education classroom fails to provide the necessary opportunities for the autistic student to improve his/her game skills, making successful integration a difficult task. Likewise, the autistic student gains little exposure to structured games strategies in a special physical education class. Therefore, the opportunity to compete for or participate in a school or community sport team is almost nonexistent. The possibility of being involved in lifelong sports is limited. Research suggests that motor control and the acquisition of motor skills by the autistic individual are considered inadequate (Hughes, 1996; Morin & Reid, 1985). The inability to develop and refine motor skills may be related to inadequate programming or a lack of opportunities to participate in a game environment. It should be noted the terms games and sports will be used throughout the study in conjunction with one another. The terms are referring to the physical education setting in which skill development, movement, competition, and enjoyment are common traits.

Statement of the Problem

As a graduate student who has completed much work with students with disabilities within the physical education setting, I felt this study had the potential to be an extremely interesting and challenging project to undertake. Due to my exposure to physical education through my undergraduate degree, I felt the objectives of this study were suited for me. I felt that there was a need to examine the possibility of an autistic student becoming integrated and meaningfully involved in a game setting. As a proponent of integration, I feel that not enough opportunities exist for students with

disabilities to become members of an integrated school or community team. Through this study I illustrated that, with positive individualized instruction, some students with disabilities (higher functioning) do have the capacity to understand game strategies and can participate in a game environment. I aimed for the students with disabilities to gain a measure of respect for their untapped abilities. In addition, I established some framework/strategies on how to instruct the autistic student, which future instructors can reference.

Purpose of the Study

The purpose of this study was to determine whether or not a high-functioning autistic girl is capable of developing game structure strategies skills through individualized instruction which will allow her to participate in a game environment. Developing a successful game structure will consist of refining the necessary sport, motor, social, behavior, communication, and critical thinking skills. In order for meaningful participation in a game environment, these skills must be introduced, learned, and refined.

Through qualitative observation work, data were collected in an ongoing way. It was my goal, through on-site observation and fieldnotes, to describe what progress the autistic student made in terms of skill development through the physical education programming. The results of the on-site observation and fieldnotes contributed to a movement profile which described Jane's habits of body. Moreover, I described the teaching strategies and framework that were used to aid in achieving the desired effects. I determined which activities were most effective in developing the game skills, as well as which activities did not contribute to progress. A comparison between the most recent edition of the physical education curriculum and the strategies or methods which I used to reach curriculum goals was completed. I provide my insights and comments when

evaluating the teaching procedures outlined in the curriculum guide. The comparison provides alternative teaching strategies for classroom instruction with the autistic student.

Questions to be Answered

Further question and issues considered and addressed include:

1. What level of skill development can the autistic student achieve?
2. Will the autistic student be capable of integrating the multiple components of a game structure successfully?
3. Will the autistic student be capable of understanding what a game structure is and act accordingly within the parameters of the game?
4. Due to the characteristics associated with autism, will the student have the desire, motivation and attention to participate within that game environment?
5. Will the use of social stories in the lesson plan aid in the development of sport skill strategies?
6. Will rapport and previous relationship in a movement environment play a role between teacher and learner?
6. What is the role environment during skill acquisition?

Rationale

Recent suggestions of physical activity programming for autistic persons reflect a growing concern of physical educators to provide meaningful experiences for these individuals. Yet, the suggestions are seldom based on empirical data since there is a lack of information about the development of a game structure for autistic persons, particularly from the perspective of the physical educator. Even though studies exist which examine the motor abilities of autistic individuals within the sport domain, some of the data are inconclusive and require further research before any recommendations can be made. Limited research has attempted to determine if an autistic student can develop

a game structure successfully, and transfer that strategy into a competitive game environment. In addition, researchers have not clearly agreed upon the framework for a game strategy which students and teachers can reference. Therefore, a gap in the literature is evident. Potentially, my study may help to define the characteristics of a game structure for autistic students. This study may also prove to be beneficial for future physical education programming for autistic students. It would be of further benefit to gather additional information to describe the motor characteristics of autistic persons in order to guide programming and curriculum development.

Although my interest in this study was personal, I, as the researcher hope that educators, as well as the public, will gain a greater understanding of autistic students. As a result, these students may become a normal part of a classroom if education is ready and prepared to accept it. Moreover, I sincerely desire that the autistic population will gain a small measure of respect for their abilities due to the efforts of one female in a physical education setting.

Importance of the Study

The most important outcome of this study is whether there are teaching and learning variables which influence how a high functioning autistic female (13 years of age) develops sport skill strategies in a variety of sports. Rather than becoming proficient in several sports, this study also determined whether certain sports are more specific and appealing to an autistic female than others. Physical education programming may also benefit from this study. For example, determining how best to teach game and sport skills to autistic students may emerge. Variables such as preferred sport, choice and sequence of activity, activities which best affect the interaction of student, progression of lesson, and rapport between learner and teacher were considered. Moreover, deciding whether or not the strategies and teaching framework used in this

study can be transferred to other subject areas for this autistic student or to other disabled students is also considered.

The implications from this study can be positive for those high-functioning autistic students who have the fundamental skills and motivation to become active participants within a physical education class. In addition, an evaluation of the physical education curriculum allowed the researcher to comment on the effectiveness or inadequacies of government guidelines. Changes or adaptations on how to implement special physical education classes are suggested.

If the results of this study demonstrate implications for other practitioners, the paper will be submitted to specific journals (associated with special needs populations) for publication. In addition, the implications of the study may be distributed to possible newsletters associated with the condition of autism.

Scope and Delimitation of the Study

This research project studied the sports-related skills of a high-functioning autistic female. As a researcher, I determined whether or not this student can develop game structure strategies and be capable of refining her game/sports skills to a level high enough that will allow her to become a participant in a game environment.

I decided to work with only one high-functioning autistic female due to the relationship that exists between us. I have developed a positive rapport with the student, in which there seems to exist a mutual respect. From our past experiences together (movement camps and programs), I feel this student has the potential to develop the necessary sports-related skills to be included in a game environment. However, I continue to question whether or not her disability interferes with the cognitive parameters of games and sports.

Outline of Remainder of the Document

Chapter Two reviews related literature in the areas of autism and games programming. Nearly half of the review of literature examines the disability of autism, focusing on characteristics, diagnostic procedures, motor skills and treatment approaches. As the review of literature progresses, it examines the stages of learning, skill development, game parameters, and other aspects related to games and sports. The review of literature provides the reader with a thorough picture of autism and sport skill development. The review of literature allows the reader to develop his own assumptions in determining whether or not an autistic student can develop sport skill strategies. The framework and background literature concerning the main themes within the research project is also provided in Chapter Two, leading the reader through the disability of autism and the theories of games programming.

Chapter Three contains the methods used in the study. Included within the initial part of this section are type of research conducted as well as the type of design and sampling procedure utilized. The rationale for making these research choices is further addressed. In addition, Chapter Three includes information regarding data collection and analysis procedures. The researcher discusses what he intended to observe and how he conducted his collection procedures. A list of potentially weakening assumptions and limitations related to the study is also provided.

Within Chapter Four, the findings and interpretation of the study are found. A pre and post movement profile of Jane is provided. The movement profiles demonstrate the changes in Jane's movement ability. In addition, the variables which played a role in her ability to develop sport skill strategies are addressed.

Chapter Five embodies the conclusion and recommendations of the study. It is within this part of the paper that I provide my insights into what has taken place and

interpret my findings to related literature. A thorough analysis and commentary on the study are provided.

CHAPTER TWO: LITERATURE REVIEW

Definition of Autism

Leo Kanner, in 1943, was the first to describe autism as a syndrome. The term refers specifically to self-absorption and withdrawal (Sherrill, 1998).

Sherrill describes autism as a severe, lifelong developmental disability that occurs before age 3 and is manifested by a lack of responsiveness to other people, gross impairment in communication, and bizarre, stereotypic behaviors. McKean (1996) feels that autism is not only a developmental disorder, but is also a neuro/biological/ sensory disorder which causes persons with autism to have difficulty making sense of what they see, hear, or experience. Consistent with Sherrill, Bauer (1995a) states that there are three categories of behavioral impairment common to all persons who have autism: a qualitative impairment of reciprocal social interaction; a qualitative impairment in the development of language and communication; and a restricted range of activities and interest. Likewise, Rutter (1978, in Sigman, Arbelle, & Dissandyake, 1995) and his colleagues highlighted essential features of autism: impaired social development; delayed and deviant language; insistence on sameness; and onset before 30 months of age. The disorder has its onset early in life, within the first 3 years. Degrees of autism vary from child to child; manifestations of the disorder vary depending on the intellectual ability and chronological age of the individual. A general profile of an individual with autism is provided by the Autism Society of Ontario (1996).

An autistic individual is one who is slow in the development of speech, limited understanding of ideas, or inappropriate use of language. Inappropriate responses in sight, hearing, touch, pain, or balance may be shown. The body may be

held in a strange or awkward manner, he/she will relate to people, objects, and events in an abnormal manner. (p. 3)

Wing & Gould (1979) distinguish among autistic children of deviant social relatedness presenting three clinical types: the most impaired or aloof child appears uninterested in human interaction and shows virtually no meaningful eye contact, communicative speech, or social responses; the passive child accepts social instructions and routines but does not seek human contact beyond the limits of the immediate situation; active but odd autistic children speak and initiate social interaction but in a repetitive, self-absorbed way without regard for social context. The three categories of impairment in social relations, pragmatics, communication, and pretend play constitute "Wing's triad" of symptoms which form the core of the diagnostic criteria for autism. The Diagnostic and Statistical Manual of Mental Disorders (DSM; American Psychiatric Association, 1994) adopted this idea and proposed that the term "pervasive developmental disorder" (PDD) be used to refer to the triad. Many persons with autism have other impairments such as retardation or seizure disorders. About 75-80% are mentally retarded (Sigman, Arbelle, & Dissandyake, 1995). Autism is further associated with fragile X syndrome, epilepsy, and other disorders that affect brain function (Sherrill, 1998).

The term pervasive developmental disorder (PDD) has been introduced as a specific diagnosis for milder cases not believed to meet full criteria for autism. Recent editions of DSM have used the term PDD to describe the entire autistic spectrum, including milder and higher functioning forms. Under that umbrella of PDD are included subcategories of autistic disorders (i.e., children meeting traditional diagnostic criteria) and pervasive developmental disorder not otherwise specified, a less defined group not

meeting the full criteria for autistic disorder. Autism is considered to be one among several subtypes of PDD. Children who display an active social interest, a degree of empathy, and a better ability to sustain interaction tend to be placed in the PDD category (Bauer, 1995a). If they have particularly strong language skills along with the milder socialization difficulties, Asperger disorder is likely to be diagnosed (Bauer, 1995 a).

Currently, it is agreed that autism is a disorder whose expressions range from the very severely involved to those who are only mildly affected and may appear very close to normal. The diagnosis cannot be made without taking a careful developmental history from parents and persons involved in a child's or adult's life. Autism can coexist with any other condition that any person may have.

Prevalence Rate

Autism is one of the most prevalent developmental disabilities diagnosed with a rate of about 4 per 10000 children, although some recent studies have suggested prevalence rates of 10 to 15 per 10, 000 (Bauer, 1995a). These estimates may vary depending on the criteria used for diagnosis. Autism is four times more common in boys than in girls, and is generally said to occur before age 3 (Bauer, 1995a).

The incidence of savantism in autism (10%) is about 200 times its incidence in the population with mental retardation and thousands of times its incidence in the population at large (Sherrill, 1998). Savantism is the ability to spontaneously perform musical, artistic, computational, athletic, or other kinds of skill at exceptional levels without benefit of instruction or practice (Sherrill, 1998).

Causes

Researchers are not certain what causes autism. Some research suggests that damage to various parts of the brain play a role in acquiring autism. Bauer (1995a) suggests the areas of the brain implicated most often with autism include the brain stem

and cerebellum, the limbic system, and selected areas of the cerebral cortex. The brain stem regulates muscle and postural tone and reflexes (Sherrill, 1998). The brain stem receives sensory information from all of the sensory modalities, except vision and smell, thus performing organizational activities (Sherrill). Its function is to convert the sensory information it receives from touch, pressure, and movement into motor commands that are sent down the spinal cord to excite muscle fibers to change length (Sherrill). Moreover, the brain stem contains structures that regulate attention, arousal, wakefulness, and general activity level (Sherrill). The cerebellum is necessary in the automatic performance of skilled movement, for good balance and the timing of fast movements (Sherrill). The limbic system regulates emotion (Sherrill). Last, the cerebral cortex is responsible for all of the higher level mental functions that enable thought, emotion, perception, memory, language, and voluntary, spontaneous movement (Sherrill). Research further suggests that autism entails a basic neurotransmitter or basic neurochemical defect within the brain, with the dopamine and serotonin systems most often implicated (Bauer, 1995a). Serotonin is a compound found in the brain that is believed to act as a neurotransmitter and to play a role in the regulation of sleep and emotion (Chaplain, 1985). Dopamine is one of the catecholamines important in neurotransmission and in coping with stress (Chaplain). Dopamine and serotonin are thus responsible for the transmission of nerve impulses from various body parts to the brain. If there exists a problem with the neurotransmitters processing stimulus, then information is lost or mixed up causing comprehension difficulties. In addition, current research findings also indicate anything that can produce structural or functional damage in the central nervous system can also produce the syndrome of autism (Sherrill, 1998).

Autism also appears to be acquired and is linked to childhood diseases (rubella, encephalitis) and metabolic problems (Sherrill, 1998). Gillberg (1989) states that there

exists an association between epilepsy infantile spasms and infantile autism. Specifically, Gillberg and Steffenburg (1987, in Gillberg, 1989) found that 29 % of cases with autism and 46 % of cases with autistic-like conditions developed seizures before age 16-23. Other neurobiological associations which so far have been documented in more than one case of autism include: pubertal deterioration, Fragile X syndrome, other sex chromosome abnormalities, tuberous sclerosis, neurofibromatosis, hypomelanosis of Ito, Phenylketonuria (PKU), Lactic acidosis, purine disorder, intrauterine rubella infection, postnatal herpes infection, Rett syndrome, hydrocephalus, Moebius syndrome, reduced optimality in pre- and perinatal periods, concordance monozygotic twins, Duchenne muscular dystrophia, and Williams syndrome (Gillberg, 1989). The specific nature of many of the links have not been understood. However, the relationship of autism to tuberous sclerosis (TS) has been documented by research. Specifically, Smalley, Tanguay, Smith, and Gutierrez (1992, in Szatmari, 1996) found that between 17 and 58% of TS individuals have autism, and between 0.4 and 3% of autistic subjects have tuberous sclerosis. Sampson, Yates, Pirrit, Fleury, Winship, Beighton, and Connor (1989, in Szatmari, 1996) state that there are two different genetic defects that cause TS, one on chromosome 9 and the other on chromosome 16. It is unclear whether autism is more common in one mutation compared to the other. In addition, the relationship between PKU and autism presents some interesting findings. A person with PKU cannot metabolize phenylalanine, a normal component of many proteins. Phenylketonuria is an autosomal recessive condition where each parent carries the mutation but does not have the disorder (Szatmari, 1996). A high level of PKU in the blood can cause brain damage and severe cognitive delays (Szatmari, 1996). Studies of children with autism revealed that 4-20% had PKU (Reiss, Feinstein, & Rosenbaum, 1986, in Szatmari, 1996), and one study of individuals with PKU revealed a 20%

association with autism (Hackney, Hanley, Davidson, & Lindsao, 1968, in Szatmari, 1996). Thus, a possible relationship exists between autism and PKU. Potential dietary changes can alter the cognitive effect PKU can have. In the case of Fragile X syndrome, research suggests that less than 5% of males with autism have Fragile X syndrome.

Autism occurs more frequently in families with a history of mood disorders, attention deficit disorders, Tourette's disorder, and obsessive-compulsive disorder (Sherrill, 1998). Bauer (1995a) states that there exists a 3% chance recurrence in children whose parent has autism. In comparison, Sherrill (1998) feels that 10% of cases of autism can be accounted for genetically.

Diagnosis

Autism was formally recognized in the third edition of the Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association, 1994). Diagnostic criteria were further refined in the revised third edition and in the fourth edition. DSM introduced a "menu" approach to the diagnosis of autism, in which a child has to meet a certain number of criteria from each of the three categories, relating to the three areas of impairment in autism (Bauer, 1995b). The criteria recognize that symptoms in each category can range in severity from mild to severe. Symptoms can also be affected by developmental level, age, and personality type. There is no current test that can be used to diagnose autism. Diagnosis must be done based on behavior observation, thus making diagnosis difficult. It is not uncommon for a child to undergo several referrals prior to being diagnosed autistic.

The diagnosis of autism entails a two-part process. Step one should determine that a child has autism or another of the diagnoses on the Pervasive Development Disorder continuum. This process consists of comprehensive assessment to determine the presence of any associated medical features and to assess the child's level of function

in all pertinent areas (Bauer, 1995b). Diagnosing a child with autism involves determining whether or not he/she meets the diagnostic criteria listed in the Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association, 1994). The second step should include an assessment of the child's family life, such as stress, strengths, resources, and coping style (Bauer, 1995b). A third step proposed by Gillberg (1989) suggests that clinicians should consider which subgroup most resembles the clinical picture in the child or adult concerned.

Cautionary guidelines are offered by Bauer (1995b) to the clinician approaching the diagnostic task: (a) always consider the spectrum of autism and PDD so as not to overlook milder cases that do not conform to the more classic presentation; (b) recognize the qualitative social deficit, which may vary from child to child, which usually is the key to making the diagnosis; and (c) autism is a developmental disorder in which the symptoms can and do change over time. An accurate diagnosis often requires a careful history, focusing upon specific behaviors that may have been present at an earlier age, particularly in the evaluation of older children; children of normal intelligence are the most likely to be overlooked or misdiagnosed, and they often are diagnosed at a later age. One must look for the milder symptoms of autism that may be present in those children; the key areas for making the diagnosis, which is a behavioral one, are the history and direct observation of the child.

For the child less than 3 years of age, diagnosis does not occur. In fact, Bauer (1995b) states that about one third to one half of families do not note any abnormalities during the first year in children later found to have autism. In agreement, Siegel, Pliner, Eschla and Elliot (1988) found that an average of 13 months passed between parents' first concerns and an initial diagnosis. By the time the child reaches 18 months the majority of parents have concerns, usually related to language or social development (Siegel et al.,

1988). Bauer (1995b) suggests that the most striking symptom that parents can identify is a delay and deviance in expressive language. The presence of echolalia or echolalic recitation is an indication of the need for further investigation (Bauer, 1995b). Bauer (1995b) further suggests that physicians should inquire about the child's interest in other children and the surroundings, any resistance to body contact, any preference to be left alone, the presence of nonverbal communication such as waving and social smiling, and any decreased or increased response to sounds. Baron-Cohen, Allen & Gillberg (1992) collaborated on a parent questionnaire that can be used as a screen for autism as early as 18 months. The five questions seek evidence of: lack of pretend play, lack of pointing out objects to another person, lack of social interest, and lack of social play.

During the age period of 3 -6, the characteristics of autism become most evident. The emergence of deviant patterns of speech such as immediate echolalia or the failure to use language for purposes of communication offers powerful clues to the diagnosis (Bauer, 1995b). In addition, the lack of interaction with other students in preschool can point to the diagnosis. Teacher's reports should be reviewed carefully for the evidence of decreased peer interaction, social withdrawal, parallel play instead of interactive play, and the presence of stereotyped behaviors or difficulties with change and transition (Bauer, 1995b). The child's interest and play habits at that age provide helpful information for diagnosis. Stone, Lemanek, Fishel, Fernandez, Williams, and Altemeier (1990) tested a framework to assist the pediatrician in observing children at the age of 3-6 when autism is suspected. Using a variety of simple toys (blocks, dolls, telephone, tea set, toy car), the child can be observed in free play and in simple interactions (Stone et al.). The results of the study suggest that weak imitation skills and low levels of functional play are prime early features of autism (Stone et al.). Thus, it may be necessary to determine whether deviant play and imitation behaviors are useful in

distinguishing autistic children from others with similar symptoms.

Within the age group of 6 years or more, the major concern is to identify the smaller group of children who have escaped earlier detection. This group includes many children who have Asperger disorder. A second focus will be those children who may have been diagnosed incorrectly as having another condition at an earlier age but who now can be identified as autistic. Bauer (1995b) states that clues to the diagnosis may come from a careful examination of pragmatic and conversational skills (off-topic replies, difficulty sustaining conversations, abnormal prosody) and by comparing rote, memory-based academic skills with those involving more abstract thinking. Teachers working with this age group should consider signs that may indicate that a child is autistic.

A number of diagnostic tools are available to aid the physician in diagnosing autism, even though an accurate diagnosis often can be made without them. The Childhood Autism Rating Scale (CARS) emphasizes structured observation of the child (Bauer, 1995b). The CARS examines aspects of behavioral, language, and social functions and allows autism to be diagnosed with a high degree of confidence (Bauer, 1995b). In addition, the Autism Diagnostic Interview (ADI) is a structured interview technique to gather reliable data from parents (Bauer, 1995b). Form E-2 and the Autism Behavior Checklist (ABC) are two further assessment tools which are simple to administer but do not produce accurate results.

A medical evaluation should be carried out on the individual who is suspected of having autism. Even though there will be no specific findings to point to a diagnosis of autism, it is important to search for physical evidence of any medical condition that could be associated with autism. Bauer (1995b) feels the physician should note any physical abnormalities that suggest the presence of a congenital syndrome, as well as examining

skin for evidence of depigmentation.

All children being evaluated for autism should have a careful psychological evaluation to determine cognitive level (intelligence quotient) and relative areas of cognitive strength and weakness. Some of the evaluation tests which have been used include the Wechsler Scale, the Bayley Scale of Infant Development, McCarthy Scales, Merrill Palmer Test of Mental Abilities, Raven's Colored Progressive Matrices, and the Leiter International Performance Scale (Bauer, 1995b). Cognitive and language performance should be assessed to establish functional levels and educational profiles of the autistic individuals which will aid in programming. The educational testing should assess not only formal academic skills, but also social and behavioral function, motivation levels, attention, and response to stressors (Bauer, 1995b). Physicians should keep in mind that diagnosing and managing autism is a complex task. Therefore, physicians may choose to contact an expert consultant who can assist in the evaluation.

For many years, it has been common for parents to be the first to suspect, and in fact attempt to diagnose, autism. Child psychiatrists are usually those who are expected to know enough to make a correct diagnosis (Gillberg, 1989). In children with autism and more normal levels of IQ, a correct diagnosis is rarely established in the first 3 or 4 years of life (Gillberg, 1989). Many children come to specialist attention in the early school years when their social oddities and communication problems have made them suspect, or their unusual interests and failure to interact with same-aged peers make parents and teachers worried about the child's future. Information concerning high-level autism has to be shared with teachers and parents so that children can be referred at an earlier age before programming becomes too late.

Characteristics

Social Interaction

The defect in social interaction is the most fundamental symptom in autism. Differences in social responsiveness are noted by parents from the first months of life and may include poor eye contact, lack of interest being held, or stiffening when held (Bauer, 1995a). Severely affected young children who have autism usually lack interest and do not engage with peers; frequently they withdraw from or do not participate in groups (Bauer, 1995a). Consistent with Bauer, Yates (1994a) suggests that affected children largely avoid social interaction. Autistic children may lack the usual anxiety around strangers or be unable to judge appropriate social distances, such as approaching and talking to strangers in a mall (Bauer, 1995a). Social interactions are likely to be characterized by a lack of depth, a roteness and inflexibility, and an inability to appreciate other people's feelings (Bauer, 1995a). In addition, Leuchter (1994) adds that autistic individuals demonstrate differences in their abilities to extract meaning from social situations, and their responses may indicate a misreading of verbal and contextual cues. Persons with autism have difficulty asking who, what, when, where, and why questions for clarifying information (Leuchter). Sigman et al. (1996) found that children with autism are very unlikely to follow the line of regard of another person; they fail to acknowledge the presence of others in ways that are routine for normal, developing children. Sherrill (1998) feels that autistic children do not know how to involve themselves with others by sharing perceptions or affections. Sigman et al. (1996) feel that the lack of joint attention and recognition of the perceptions and knowledge of others has devastating consequences for interpersonal relationships and social understanding. Joint attention is viewed as the ability to share the psychological space of another through mutually coordinated interaction. People with autism who are not so severely

affected are those who do attend to other people's attempts to communicate and make some response (Gillberg, 1989). The highest functioning autistic individuals initiate communication with others, but do this mainly in order to indulge their repetitive interests and not to take part in an exchange of ideas and feelings (Gillberg, 1989).

Most interestingly, Sigman et al. (1996) further state that some observational studies of young children with autism show that they respond positively to efforts by their parents and unfamiliar adults to involve them in social engagement. For example, older individuals with autism are often eager for social involvement, even though their response may appear rather unusual (Sigman et al.). Moreover, some autistic children are reported to form attachments to familiar caregivers. Sigman et al. reported that about one-third of children with autism have formed secure attachments with their mothers, even though some clinicians were certain that children with autism were not able to form attachments.

Autistic children require behavior management therapy to learn appropriate nonverbal social behaviors such as eye contact, facial expressions, gestures, and body postures. The lack of interest in the social world means that autistic children seldom learn through the normal processes of imitation and listening to instruction or advice (Sherrill, 1998). Firm touch will get the autistic child's attention; firm pressure is better than light touch because many children are tactile defensive to touch (Sherrill, 1998). Further, punishments like time-outs are seldom effective because the child with autism prefers to be alone (Sherrill, 1998). Motivators or reinforcers must be personally meaningful for the autistic child in order to motivate cooperation with the teacher's request. The instructor must provide specific rules that encourage cognition about what to do in different academic situations.

One method used to alleviate the social interaction problems of autistic children

is the use of social stories. Social stories are written and used for several purposes: (a) they promote adjustment to changes in daily routines, (b) they explain the behaviors of others in social situations, and (c) they provide ways of introducing new social skills and academic experiences (Leuchter, 1994). The story is created to describe an event, to direct or mediate a desired response, and to understand the perspectives of other people (Leuchter). The social stories help the autistic individual with what to do and what to say in specific social situations. Leuchter suggests that social stories can facilitate a smoother integration of students with autism into the mainstream classroom.

Communication

The language deficit in autism is described as a pragmatic deficit, meaning that the use of language for social communication is particularly impaired compared with other aspects of language (Bauer, 1995a). Yates (1994a) describes pragmatics of communication as the use of speech and gesture in a communicative way appropriate to the social context. Comparatively, Baron-Cohen (1988) points out that autistic children show a singular impairment in the pragmatics of communication and that no cases of speaking autistic children with normal pragmatic competence have ever been found.

Sherrill (1998) states that about 50% of children with autism do not talk. The loss of language and the failure to learn to speak are major features of autism (Sherrill). If speech has not emerged by age 5-6, the prognosis for subsequent meaningful speech is poor. Language tends to be rote, repetitive, and lacking in communicative meaning (Bauer, 1995a). Specific features characteristic of autism include: echolalia, confusion of personal pronouns, verbal perseveration, and abnormalities of prosody (Bauer, 1995a). Echolalia (echoing) is involuntary repetition of words spoken by others (Sherrill, 1998). Confusion of pronouns entails a general avoidance of "I" by saying "you" (Sherrill). Further, autistic children have difficulty with

turn-taking conversations, lack preoccupation with the child's own areas of special interest, tangential or off-topic responses, and problems with more abstract language (Bauer, 1995a). Words representing concrete concepts are easier to translate than words representing abstract concepts (Sherrill). Due to the fact that many individuals with autism may be visual thinkers, they have difficulty processing auditory input. Temple Grandin, a successful autistic entrepreneur, once stated that pictures are her first language and words are her second (Sherrill, 1998). Bauer (1995a) suggests that speech therapy can aid problems with speech and intrusive language style.

Repetitive Stereotyped Behaviors

In those autistic individuals who are learning as well as socially impaired, stereotypes tend to take the form of bodily movements such as rocking, teeth grinding, clenching and unclenching the fists, finger flicking or aimless pacing (Gillberg, 1989). More complicated movements involving the head, hands, arms, and legs can also be seen. Many of the motor stereotypes tend to occur frequently when the child is excited, stressed, or upset (Bauer, 1995a). Gillberg further adds that repetitive activities can involve particular sensory experiences, such as listening to the same passage of music, staring at the same wallpaper patterns or display of lights, or watching spinning objects such as clothes in a washing machine. More able children tend to insist upon carrying out the same sequence of actions, such as a lengthy bedtime ritual, or following the same route to familiar places (Gillberg). The whole family may have to fit into these rituals. Many of these children are preoccupied with minor details of situations or objects, aspects that most other people tend to overlook. At the highest level, the problems are shown in verbal or intellectual forms, such as amassing facts concerning time tables, calendars, the weather, the movement of the planets, or the characters and events in a particular series of books (Gillberg, 1989). The autistic child becomes

extremely involved in such interests. Because some of these areas of interest may have value in schools, it is possible to use them as tools for helping these children gain social, academic, or other skills in school.

Emotional Expressiveness

Most researchers agree that children with autism are emotionally flat. Sigman et al. (1995) describe autistic children as showing more negative emotions than normal or mentally retarded children. The researchers further argue that autistic children expressed incongruous blends of emotion, in which one part of their faces showed one emotion and another part showed a contrasting emotion (Sigman et al.). Hence, research suggests that autistic individuals have great difficulty to pose or imitate a facial expression. As well, the lack of prosodic characteristics (stress, pitch, timing, rhythm, and melodic tone of speech) in voice tone demonstrated by many autistic children limits their use and understanding of vocal emotional expression (Sigman et al.). The majority of parents characterize their autistic children as showing more negative emotions than other children (Sigman et al.). Nevertheless, some parents of autistic children of all ages and levels of ability describe their children as showing high levels of emotions.

Emotional Understanding

Sigman et al. (1995) state that autistic children at a developmentally young age (mental ability or age) do not look very much at people showing distress, fear, or pleasure. Comparingly, older and more mature autistic children also have significant difficulties in understanding the emotions of others (Sigman et al.). In agreement, Baron-Cohen (1988) feels that the basic problem in autism has been an “inability to enter into emotional touch with other people” (p. 389). Hobson (1986) views that the autistic inability to connect emotionally with others is based upon a failure of what he calls “non-inferential empathy”, that is, the innate capacity each has to know about other minds by

direct intuitive perception rather than by cognitive inferences. This lack of intuitive perception would impede the development of an awareness of others as similar beings with their own feelings, thoughts, and wishes. Hobson further argues that autistic children lack the innate ability to interact in a “intersubjective” way with others. Intersubjectivity allows individuals to communicate meaningfully during an experience (Hobson). One example of this natural intersubjectivity is social referencing. An example includes an infant pointing towards something and the mother is looking at it; the infant shows by his/her effective response that he/she is aware of the mutuality of his/her gaze and that this is the shared experience. However, Baron-Cohen (1989) argues that a disturbance of affective development is not primary in autism. Baron-Cohen (1989) points out that autistic children have emotional responsivity and that problems in recognizing emotional expressions are not specific to autism. Yates (1994a) further adds that autistic children do not avoid eye contact nor physical closeness with others; they simply do not seek it out as normal children do.

Autistic children not only have difficulty in understanding the emotions of others, but they also have difficulties in explaining their own emotions (Sigman et al., 1995). Identifying which type of emotion(s) they are experiencing is a complex task. Research infers that even the most intelligent children with autism can identify occasions of happiness and sadness, but complex emotions of embarrassment are problematic (Yates, 1994a).

Cognitive

Baron-Cohen, Leslie and Frith (1985) argue that the primary cognitive deficit in autism is an innately impaired capacity to develop a theory of mind. A child who has a theory of mind has an “understanding that people have minds and mental states, and that mental states relate to behavior” (Baron-Cohen, 1993, in Yates, 1994a, p.5). Without a

theory of mind, children cannot represent to themselves the mental states representations of others and use that to predict their behavior. This is clearly a crucial component of social skills. Baron-Cohen, Leslie and Frith (1985) found that 80% of autistic children were unable to correctly predict the beliefs of others, while most mentally retarded and normal controls of lower mental age were able to do so with facility. Autistic children were also less able than controls to distinguish between mental and physical states, understand mental functions of the brain, and use their own mental states to judge aspects of the environment (Baron-Cohen, Leslie & Frith, 1985). In a follow-up investigation, Baron-Cohen (1989) examined the 20% of autistic children who had a theory of mind at the lowest level in the 1985 study and tested their ability to use a theory of mind at a higher level. The study revealed that even the subjects who attributed beliefs at the simplest level in the 1985 study (that is, to one person about an event or object) were unable to attribute beliefs at a more advanced level (that is, to one person about another person's beliefs); (Baron-Cohen, 1989). Therefore, it may be possible to conclude that theory of mind deficits are relatively specific to and universal among autistic children. In addition, Baron-Cohen (1989) suggests that autistic subjects who may have a theory of mind may be chronologically very delayed in the development of this capacity, on average by 7 chronological years.

By age 4, children understand that others have beliefs and desires which can differ from their own (Baron-Cohen, Leslie & Frith, 1985). Only those autistic children who have advanced verbal abilities, more than 5 1/2 years old and perhaps higher, are able to understand theory of mind, and even some of the very intelligent young adults with autism never acquire it (Sigman et al., 1995). The difficulty in understanding the thought processes of others clearly limits the relationship that individuals with autism, even those of high intelligence, can form with others. The cognitive advocates believe

that the concept of a failed “theory of mind” explains the observation that autistic people cannot and do not attune themselves to others (Yates, 1994b). In other words, they cannot represent to themselves what might be going on in the minds of others, such as desire, belief, know, pretend or imagine.

Yet, Josef Perner (1991) argues that while autistic children may have difficulties with knowing other minds under many conditions, there is evidence that they can form representations. Perner believes that autistic individuals can represent to themselves what others are perceiving; for example they know a picture on a table upside down to them would be right side up to someone standing opposite to them.

Autistic children pull together a very limited amount of information at one time. About 20% of people with autism have IQs above 70, 20% have IQs between 50 and 70, and 60% have IQs below 50 (Sherrill, 1998). Sherrill adds that autistic people tend to score low on tasks demanding verbal skills and abstract reasoning but high on tasks requiring memory and visual-spatial or manipulative skills. Approximately 75% of individuals with autism function at a retarded level (Sherrill).

A cognitive deficiency which has a substantial impact on the educational progress and emotional understanding of the autistic person is the mental mechanics involved when a person processes information. This deficiency includes: nonfirings, overfirings and misfirings.

Nonfiring is one type of connection or lack of communication in the brain. Non-firing entails the autistic individual not getting the feedback (not feeling anything) or the connections switch on and off or overload all the time (Venables, 1995). When nonfirings are experienced, the individual will feel the emotion for a minute; the next minute he/she may lack any feeling. Nonfirings can cause a person to feel artificial, futile, unpredictable, and scared or depressed. Second, overfiring allows the

individual to feel and understand the emotion, but the brain turns up the physical volume response to a level that makes having emotions very difficult to manage (Venables, 1995). This effect can cause emotions such as "caution" to feel like "terror", and "happy" to feel like "rage". Last, misfirings are when the brain gets the message mixed up. The brain gets the message jumbled because the brain fails to process the emotion or information accurately (Venables, 1995). Therefore, the brain has difficulty distinguishing between different emotions and information properly (Venables). These sorts of misfirings can really make life incredibly frustrating and can stop a person from being motivated to have sustained involvement and interaction with others.

Unusual Responses to Sensory Input, Including Stimuli

Autistic individuals respond to stimuli in an exaggerated manner. For instance, the hearing of an autistic individual may be overly sensitive to sound. Some sounds are heard too well, while other sounds are not heard clearly enough. Or, as McKean (1996) adds, the two ears may be interpreting the same sound differently, leading to comprehension problems for the child. High-pitched, shrill noises that are mildly unpleasant for ordinary people are extremely painful to some children with autism and result in fear and anger reactions, such as screaming, crying, or rocking with their hands over their ears (Sherrill, 1998). Sounds which are found in the physical education setting such as whistles, scoreboards, bells, and yelling should be minimized for the autistic individual. Therefore, a mainstream physical education classroom may not be the ideal place for children with severe responses to sounds. Sherrill feels that children with extreme sound sensitivity respond better to individuals who talk in quiet tones or whispers; teachers should decrease the loudness of their speech to a whisper when exerting control over a child with sound sensitivity problems. Furthermore, visual stimuli such as bright colors and moving objects seem to excessively stimulate some

children with autism (Sherrill). McKean (1996) points out that an autistic individual's eyes may be overly sensitive to light, requiring a certain amount of darkness or sunglasses to be worn, even indoors. McKean further points out that eyes may work too well, allowing an autistic individual to see separate hair strands on a person from a distance away. These stimulations are serious distractions that prevent attending to lessons and often cause stereotypical behaviors such as extended gazing or twirling, spinning, or tapping behaviors. In addition, autistic children experience abnormal responses to touch, balance, smell, taste, reaction to pain, and the way a child holds his or her body (McKean). In terms of touch, some autistic children may be tactile defensive, while others crave touch and deep pressure. Likewise, the smelling sensation of autistic children may be overly sensitive or not sensitive enough. Taste is a matter of texture more than it is a matter of flavor (McKean). Some autistic children will eat only soft-textured foods, while others eat only foods with a rough texture. An autistic reaction to pain is usually nonexistent (McKean). Children with autism often do not react to pain, even when a broken bone is involved.

Motor Skills

The motor abilities of autistic individuals should be a consideration for an instructor prior to implementing a program of physical activity. Recent suggestions of physical activity programming for autistic persons reflect a growing concern of physical educators to provide meaningful experiences for these individuals. Yet, the suggestions are seldom based on data since there is a lack of definite information about the motor domain of autistic persons, particularly from the perspective of the physical educator. Some researchers argue that the motor development of autistic children is within normal range, while more current descriptions point to inadequate motor control and delayed acquisition of motor skill.

The majority of recent research will reinforce that autistic children have motor impairment problems, and the possibility to program for these children is extremely challenging. Manjiviona and Prior (1995) completed a study testing the motor skills of a group of high functioning autistic children. The motor skill test assessed three separate abilities: manual dexterity, static and dynamic balance, and ball skills. Manjiviona and Prior (1995) determined that high-functioning autistic children have definite motor problems and are performing at a much lower level than their age peers. The nature of the motor disability was more pervasive, affecting both fine and gross motor areas (Manjiviona & Prior). Often the subjects did not use their nonpreferred hand appropriately and worked awkwardly at fine motor tasks (Manjiviona & Prior). The data further indicated that there is a tendency for some younger subjects to show greater motor impairment than some older subjects. Observations of impulsivity and an inability to take a slow, considered approach to tasks are reminiscent of the executive function deficits that have been reported in autistic children. In agreement, Morin and Reid (1985) determined that the motor patterns of throwing, jumping, running, ball catching, and balance could be characterized as immature, with inappropriate and nonfunctional arm movements being common. It seems apparent that most studies render autistic people as encountering a lack of substantial development in motor skills. Comparingly, Reid, Collier and Morin (1983) further attempted to compare the motor performance and fitness status of autistic individuals to nondisabled and retarded peers. Specifically, sit-ups, catching, balance, target throw, mat crawl, and scramble were assessed. The study illustrated that the autistic group tended to score below comparable samples of nondisabled and retarded persons on most motor performances and physical fitness (Reid, et al., 1983). Therefore, individualized instruction may be necessary for these youngsters to develop age appropriate motor skills.

The inability to take a slow approach to problem solving reported by Manjiviona and Prior (1995) may be due to motor planning and sequencing problems encountered by the autistic individual. Hughes and Russell (1993) found that children with autism had significant difficulty in copying a goal-directed "switch then reach" sequence to retrieve a marble placed inside an apparatus. Moreover, Hughes and Russell noted that subjects with autism appear to have particular difficulty when the sequence of acts to be performed is nonmeaningful. Hughes (1996) further examined whether subjects with autism show planning deficits even at the primary level of planning. The primary level of planning in the study was sequencing a grasping activity to a series of single acts. The results of Hughes's study confirmed that young people with autism have problems in executing goal-directed motor acts, and indicate that these difficulties are apparent even in very simple situations (such as grasping an object to place it at a target locus). Within the same study, the performance of preschoolers suggests that significant gains in executive control occur between the age of 2 and 4 (Hughes). The performance of the task depended upon a number of executive processes to merge. Due to their inability to coordinate their executive processes, subjects with autism showed an independent and marked impairment in this area.

Even though the majority of research reports suggest that autistic people are motor impaired, some researchers feel that motor impairment is not especially characteristic of all autistic individuals. Jones and Prior (1985) reported that the motor development of autistic children may be normal due to the observation of grace and skill in two tests of motor imitation. However, even within that research project, the researchers discovered some degree of motor impairment. Jones and Prior found impairments in body imitation ability for both gesture and dynamic body movements when compared to mental age-matched and significantly younger children. For

example, the autistic children were unable to coordinate their limbs in some of the imitation tasks (Jones & Prior). The inability to coordinate body parts during a task may indicate insufficient neuromotor development. Similarly, in a test of various motor patterns, Morin and Reid (1985) reported that high-functioning autistic persons' catching skills were good, due to the repeated exposure and opportunities they had. Thus, practice and exposure are two key variables in skills acquisition for the autistic student.

The motor characteristics and cognitive abilities of autistic students present an overwhelming task for the instructor to guide program and curriculum development. Teaching approaches must be flexible and accommodating for a variety of students. Most likely, instructors may have to incorporate a number of teaching strategies to achieve the highest performance from students. The use of teaching prompts may be one teaching alternative for some teachers. Prompts are considered to be extra stimulus added to the teaching environment. Therefore, the child must now respond to the training stimulus and the prompt. Collier and Reid (1987) compared two instructional models designed to teach autistic children a bowling task. One strategy used extensive physical, visual, and verbal prompts (extra-stimulus prompt model), while the second minimized such prompts (within-stimulus prompt). The results of the study demonstrated that the extra-stimulus prompt group performed significantly better than the within-stimulus prompt group on the bowling task (Collier & Reid). Situations in which several cues impinge simultaneously on children are typical of those they encounter in their everyday learning environments. Speech, for example, is a complex stimulus input for which adequate responding requires the child's attention to a number of stimulus dimensions (volume vs. pitch). If a child responds to only one or two of these dimensions, he or she will not understand what is said.

Research tells us that many autistic children respond to an extremely limited part of their environment that is too restricted (Lovass, Koegel, & Schreibman, 1979). This problem is referred to as stimulus-overselectivity because the children overselected a limited set of stimuli from those available in their environment (Lovass et al.). According to Lovass et al., overselectivity suggests that the children respond to only part of a relevant cue, or even to a minor, often irrelevant feature of the environment, without learning about the other relevant portions. Lovass et al. noted that when autistic learners were presented with a complex stimulus, their behavior typically came under the control of a limited part of the stimulus. Overselectivity may be related to several of the behavioral deficits in autism, such as a failure to develop normal language or social behavior, failure to generalize to new situations, and a general difficulty in learning new behaviors. In agreement, Gersten (1980) argues that autistic children respond to only a part of the relevant cues or a feature of the environment that is irrelevant to the task or situation. The difficulty that the children experience is due to overselective responding. Perhaps the teaching techniques composed of extra-stimulus prompts might prove problematic with learners who are autistic.

Alternative teaching approaches have been proposed to aid the autistic students and their instructor. Research by Prior and Chen (1975) has indicated that autistic subjects appear to be aided particularly by haptic cues. Prior and Chen found the performance of autistic subjects to be superior to that of nonautistic controls when tactile feedback was provided. Second, Wing (1976, in Collier & Reid, 1987) suggests that moving subjects through a desired motion was effective in teaching that motion. Last, continued exposure to a task once it has been mastered, or overtraining, has been successful in teaching a task. Schover and Newsom (1976) noted that overtraining increased the number of cues that autistic children respond to. Reid (1991, in Sherrill,

1998) suggest that reinforcement, task analysis, and physical prompting are the three keys to motor skill improvement for most persons with autism.

Prognosis

Lovass (1996) describes autism as one of the most severe impairments of all psychiatric categories. Lovass adds that autism is always chronic: 95% of children diagnosed with autism remain autistic as adults and in need of institutional and/or productive care. Traditional estimates suggest that about two thirds of cases have an overall poor outcome, defined by social adjustment, ability to work, and ability to function independently (Bauer, 1995b). Comparingly, Sherrill (1998) states that about one third of persons with autism are able to live and work fairly independently by adulthood; the other two thirds remain severely disabled. A small percentage of cases (10%) seem to have better outcomes in terms of independent function, and a few seem to "outgrow" their autism (Bauer, 1995b). The majority of children with autism do progress in the area of social and language function and lessen their repetitive and stereotyped behaviors as they move through childhood (Bauer, 1995b). Common periods of gain seem to be during the later preschool years, and it is also common for some behavioral or functional deterioration around the time of puberty (Bauer, 1995b).

The two most important prognostic factors for later function are the tested IQ (nonverbal IQ, >70) and the presence of meaningful speech by 5 years of age. An IQ <50 and lack of speech predict poor outcome. Limited data suggest that appropriate interventions can influence the prognosis positively. Sherrill (1998) contends that partial or total recovery from classic autism is a result of intensive, structured early childhood intervention programs.

Approaches to Autism

There is no cure for autism. However, many treatments are available to people

living with this disability. Many of the treatments for autism are exactly that, "treatments". Unfortunately, treatments will not cure the autistic person. Rather, treatments are utilized to create a more efficient and meaningful life for both the person with autism and his/her caregivers. Some of the potential approaches used to treat autism will be reviewed.

Auditory training, originating in France, is based on the principle that autistic children can hear only certain frequencies. Thus, any sounds that contain particular frequencies can be much louder in volume than other sounds, even though these sounds are similar. The auditory training integration treatment seeks to reduce auditory hypersensitivity and improve the clarity of hearing by training people to readjust their perception of pitch (Williams, 1996). During this treatment, the individual with autism is hooked up to a device called the "audiokinitron" (McKean, 1996). Music is played and filtered through the audiokinitron, which filters out certain frequencies at random, based on the preceding audiogram. The music flows from the audiokinitron to the ears of the individual, who wears industrial headphones. The object of the exercise is to give certain hair cells within the cochlea of the ear some rest, while exercising the remaining cells (McKean). It is hoped that all cells can be brought back into sync (McKean). Improvement is said to occur within 6 months following this treatment. Williams (1996) agrees that many people with autism suffer from auditory hypersensitivity; however, he feels the true causes of this hypersensitivity have nothing to do with the perception of pitch or volume. Williams argues that people with autism have sensory hypersensitivity as a result of an information processing problem that leads to information overload and sensory integration problems. The causes of information overload have nothing to do with pitch and volume but with the number of simultaneous sound sources, the duration of the bombardment from those sounds, and the rate of bombardment relative to

processing capacity (Williams). In other words, too much is going on for processing to keep up. Williams feels that training hearing out of perceiving certain frequencies may reduce some stress in the short term for some people, but it may also directly improve the efficiency of information processing and subsequent loading.

Second, facilitated communication is a technique of assistance which attempts to assist people in self-expression. The treatment of facilitated communication employs the use of a facilitator who gently holds the hand of the individual with autism wishing to communicate (McKean, 1996). The hands are held above a computer, typewriter, letter board, or other device which contains letters, numbers, and various symbols and words. The facilitator physically assists the person with autism in pointing to responses while simultaneously being sensitive to the direction from the person with autism. This allows the individual more control, enabling him/her to spell out what they want to communicate. A good facilitator will progressively "fade out" the physical support, allowing the person with autism to gain more personal responsibility for his or her expressions. Controversy has arisen debating who is the one doing the communicating, the facilitator or the person with autism.

The use of a behavior modification system allows teachers or parents various approaches for tackling behavior problems. People using behavior modification can take a tough, firm approach or a gentler approach. Instructors, parents, or any individual in a supervisory position can rely on a system of punishments or a system of rewards, or a combination of the two. However, the links with rewards or punishments simply aren't made because autistic individuals have problems of connection and of perception. In some cases, the behavior modification attempts may feel like a senseless ritual, regardless of its good intention. Different behavior modification programs have different approaches. Some use a firm approach that allows little room for the person with autism

to manipulate or reason with the carer. Other programs are more intelligent and sensitive to the needs of the client. These programs take into account what each person actually likes and dislikes in tailoring rewards and punishments personally. Those practices which allow for little flexibility and remain firm seem to be less effective. The autistic person is unable to develop a sense of identity or ownership over his/her behavior. Therefore, rewards and punishments become less meaningful and effective because the autistic individual is complying with the will of the caregiver/instructor.

A clinic within the UCLA School of Research has pioneered a successful attempt to foster positive attitudes through behavior interventions. This intervention approach is integrated within a preschool program through various stages. The intervention is based on shaping behavior through reinforcement of successive approximations, prompting and fading procedures, and use of positive reinforcers that are functional (i.e., serve the intent of increasing behavior). Examples of reinforcers used within the study include small bites of food, sensory and perceptual reinforcers, and social praise involving verbal praise, tickles, and hugs. As intervention progressed, the researchers replaced the "artificial reinforcers" with more normal, social, and everyday reinforcers (Lovass, 1996). Positive behaviors were maximized through prompting and positive reinforcement. Incidences of aggressive and/or self-stimulatory behaviors are reduced by being ignored, and by shaping alternate and more acceptable forms of behavior. Intervention progresses from teaching beginning self-help and elementary receptive language skills to teaching of nonverbal and verbal imitation, and establishing the beginnings of appropriate play (Lovaas, 1996). Supervision of intervention is facilitated by weekly staff meetings of 1 to 2 hour duration in which each team member works with the child in front of the child's parents and senior staff in order to obtain feedback on effective and ineffective intervention procedures. The family is well informed concerning the child's

progress, services rendered, and the effectiveness of various interventions. The family can further reinforce the interventions in the home environment if they deem it necessary.

The second stage of intervention emphasizes the teaching of expressive and early abstract language, interactive play with peers, and introduction to normal preschool (Lovass, 1996). In a third and more advanced stage, the child is taught to learn by observing other children learn: early academic tasks like beginning reading, writing, and arithmetic; socialization skills, and cause-and-effect relationships. Following the 3-month introductory trial to preschool, the parents and teachers will meet to determine whether to continue the child in the preschool. Research demonstrates that 45% of children who receive early and intensive intervention can reach normal functioning and be successfully mainstreamed (Lovaas, 1996). More importantly, follow-up data demonstrate that the children who were treated with the behavioral intervention prior to the age of 5 had made major increases in intellectual functioning and educational achievement at the age of 7 (Lovass, 1996). At the mean age of 12 years, 42% of the children were classified as normally functioning in the sense that they passed regular classes in the public system and scored within the normal age on IQ tests (McEachin, Smith & Lovaas, 1993). Almost half of the autistic children undergoing behavior intervention were found to be indistinguishable from average children on tests of intelligence and adaptive behavior (McEachin et al.). Therefore, behavior intervention treatment may produce significant and long-term gains for many young children with autism.

The sensory integration technique aims for people to use their vision, hearing, sense of touch, smell, taste, body sense, and proprioception in an integrated way. Thus, several sensory systems are working at once. Autistic people have difficulty using sensory systems simultaneously. Many can use only their eyes or their ears or their sense

of smell at one time. Integrating their systems like nonautistic people is not possible. Even though the sensory integration system identifies sensory integration problems, it does not account for the causes of the problem. Interestingly enough, an insider to the disability of autism suggests that sensory integration techniques may be disadvantageous (Williams, 1996). The example used by the insider discusses when sensory integration has not taken place because the brain is not able to filter out enough information on each sensory channel for it to be able to cope efficiently with all that information. In this case, not using certain sensory channels (not using vision when listening) allows the individual to process information more fully and quickly on the channel being used (hearing). An overload of information may arise if the autistic individual is not capable of channeling the information to the most efficient senses (sight versus hearing). Some forms of sensory integration treatment include: application of pressure (squeeze machine, a pressure suit, pressure bracelets), filtered lenses, and brushing.

In some people with autism, significant improvements in their processing of information, sensory hypersensitivities, communication, mood, and behavior have brought about various diets and supplements that address biochemical, immune system, and metabolic problems. Biochemical approaches work by improving the efficiency of information processing. Some treatments do this by increasing nutrients that assist in general brain functioning, some by giving supplements where nutrient deficiencies are found or by taking away the underlying causes of nutrient deficiencies. Others work by trying to correct excesses or imbalances in brain chemistry. Some of the different biochemical treatments that have been used with people with autism include: candida diets, amino acids, vitamin-mineral supplements, complex homeopathy, hypoglycemia, hormone related drugs, wheat-free, milk-free, sugar-free and additive-free diets and herbal remedies.

Music, art, and movement can also be used as tools through which to build interaction and expression. These techniques can be less directly confrontational than speech, and thus may be more useful with people who experience intense emotional hypersensitivity or exposure anxiety (Williams, 1996). Further, these techniques can bring a sense of balance and rhythm which can be comforting for some people with high anxiety levels or mood problems.

Physical and Special Education

Special education as defined by law (according to available curricula) also includes instruction in physical education. Students with disabilities should be educated, to the maximum extent possible, with their nondisabled peers. Only when disabling conditions are so severe that they prevent successful participation in the regular classroom should children with disabilities be placed in special or separate classes. The goal is to place each student in his/her least restrictive environment for each school subject, including physical education. Sherrill (1998) feels that the least restrictive environment should be a setting which matches individual abilities with appropriate services and preserves as much freedom as possible. An accurate assessment of the child is crucial when placing him/her in a least restrictive environment. Decisions must be based on the individual's needs and abilities which maximize opportunities for learning.

Folio (1986) feels that physical education should develop the following areas of physical and motor fitness: fundamental motor skills, motor development and movement education, instruction in aquatics and dance, individual and team games, and sports that include intramural and lifetime sports. In comparison, Adams, Daniel, and Rullman (1972) feel that the developmental objectives of physical education should include: organic development (muscle and cardiovascular strength and endurance, flexibility); neuromuscular (locomotor/nonlocomotor skills, sports skills, game type skills, motor

factors); interpretive; social; and emotional. Each researcher may have his/her own agenda for classroom instruction, but many of the concepts overlap one another and work in related areas.

Movement in Physical Education/Movement Education

Movement represents the key component of any physical education class. Movement should be the central focus of our field. Physical educators should strive to help human beings to move efficiently, to increase the quality of their performance, to enhance their ability to learn, and to promote their health. Understanding of movement concepts such as body awareness, spatial awareness, qualities of movement, and relationships helps physical educators construct meaningful movement experiences. It is also important that children receive instruction in fundamental motor skills. Fundamental motor skills include locomotor skills such as running and jumping, nonlocomotor skills such as bending and stretching, and manipulative skills such as throwing and kicking. These fundamental skills serve as a foundation for the development of more complex and specialized skills that are used in sports and other physical education activities, work, and life situations in which human beings are involved in movement.

Various concepts relating to movement must be understood by both physical educators and their students if meaningful understanding of movement is to be attained. The concepts of body awareness, spatial awareness, qualities of movement, and relationships make up Laban's four components of movement (Stanley, 1977). These components help form the basis for developing fundamental movement and the foundation for movement education. The researcher, being a graduate of Brock University's physical education program, followed the teaching principles of movement education in his study. Thus, a closer examination of this teaching approach will be

covered.

Zakrajsek and Carnes (1986) describe movement education as the segment of a child's education that provides the skills to meet the demands of any movement task with which he/she is confronted. Movement education encompasses a systematic body of knowledge as well as a specific methodological approach which basically employs a child-centered, indirect methodology. The movement education approach to physical education provides instructors with a flexible model to serve a variety of ability levels, as well as providing the opportunity for students to participate in physical education regardless of skill level. The opportunity to participate for some students aids in the development of social skills, self-concept, and movement repertoire. In the movement education approach, the instructor will teach a skill using a number of progressive tasks. The tasks will allow for a number of different responses in a nonthreatening environment. Students will be capable of answering movement tasks in various ways. It is through this environment of experimentation that students begin to develop a sense of creativity and body awareness. This discovery contributes to the improvement of a student's self-image and personal awareness. Each student is able to participate and progress at his or her own level of ability with many opportunities for success. Most importantly, movement education provides a positive environment for those students who feel threatened in a physical education environment. The noncompetitive nature of the program is likewise very conducive to learning.

There exist four main movement themes with multiple subthemes under which movement education unfolds. Each theme (body, space, effort, relationship) and the subthemes will be examined (Appendix C). Within the component of body awareness, the child should be able to identify body parts, be aware of what his or her body can do, and understand the relationship of body parts to the total self (Wuest & Bucher, 1991).

Included within the body awareness component is movement of the body and its parts, as well as body shapes. Many body actions are developed by the time the child enters school, which does not suggest that the instructor does not have to provide opportunities to continually explore body awareness. Second, space awareness includes the type of space in which the body moves as well as the direction, level, and pathway that the body takes in movement (Wuest & Bucher). Movement takes place in space. Space is of two kinds, general and personal. Personal space includes the space that a person can reach by stretching, bending, and twisting. General space includes areas in which one person or several can move. The amount of space available and the number of persons in a particular space affect movement possibilities. Therefore, future growth in movement is related to how well students understand the concept of personal and general space. The ability to become efficient movers at directions, levels, and pathways are vital in order for success in games and sports. The quality of movement describes how time, force, and flow affect body movements. Time is related to the speed at which movement takes place. In many sports activities, a change in speed is necessary. This may vary from very slow movements to quick movements. Force is the effect that one body has on another. Force generated by the body is produced by the contraction of muscles. Flow is the continuity or coordination of movements. Movements may be free flowing or they may be movements of bound flow. Last, the concept of relationships implies that in most games and sports children do not move alone. They move with someone, oppose someone, overcome obstacles, or use implements of some type. Relationships with objects are of two types: manipulative and nonmanipulative. In the manipulative case, the performer is concerned with controlling the movement of the object. In the nonmanipulative case, the purpose is to adapt his or her movement to a stationary object. When working with other people it is important to coordinate the movement patterns in

space, with the possibility of utilizing the knowledge about qualities of movement, body awareness, and different movement forms. Acquiring an understanding of movement is an essential part of the early physical education experience. A knowledge of the factors affecting movement is important to future learning.

When incorporating the movement education approach to teaching skills, many variables or components have to be considered, such as task phrasing, lesson structure and design, and evaluation. These variables have to be introduced, developed, and refined in order for a positive teaching experience to evolve.

While designing tasks, phrasing should be accurate, progressive, and clear. Task phrasing will determine how much freedom the student does or does not have when completing a task. When wording tasks, it is important to be aware of the types of decisions that can be made and the types of decisions that the student is being allowed to make. The more "closed" a task, the fewer decision responsibilities there are for the student. The more "open" a task is, the more decisions the students have to make. Open tasks typically elicit individual responses for the task, have more than one correct response, and, therefore, increase the students' responsibility for their own learning.

It is necessary that, when phrasing, there is a logical progression from task to task. Activities must be made more complicated or simplified to suit the needs of the students. Movement education's approach to teaching will lead to a gradual skill development and conceptual understanding. There are six types of movement tasks typical in a learning sequence. The "basic task" is the starting point of each learning sequence of a lesson. Basic tasks should relate to one or more of the lesson objectives. These tasks can range from being closed to open. A basic task is followed by a refining task. The refining task tells students how to improve what they are doing. These tasks focus on execution and quality of performance. Refining tasks are the core of the learning sequence because

these provide the feedback necessary for the student to make refinement to their movements. These tasks tend to be closed typically because their intent is to focus on specific aspects of a movement concept. Third, the simplifying task reduces the difficulty of the task for understanding. Tasks may have to be adjusted to meet the needs of the movement. For example, instructors may change certain variables such as: equipment (size of ball), environment (size of boundaries), or dimension of previous task (simplify run to walk). The extending task increases difficulty of task to meet new level of competency. It is possible to increase the level of difficulty of the task by making changes in the same areas as in the simplifying task, such as the equipment, the environment, the movement concepts, and by combining skills. The applying tasks are those that give students the opportunity to use their new skill in conjunction with other skills, in a new context, or on new apparatus. Last, organizational tasks tell children where to go, with whom to work, what equipment or apparatus to get, where to place it, when to put it away. Good organization results in safety, efficient use of time, and good behavior.

Components and structure of a thorough lesson in the movement education approach should include an introduction, concept and skill development, and culmination. The introduction of the lesson incorporates basic and refining tasks. The introduction should prepare the body mentally and physically, be vigorous, be a review, and be individual. Second, concept and skill development may: introduce or review concepts, include discussion to clarify a concept if it is new (in older age groups), involve application of the concept, stress continuity of action, include working with others (with older age groups), or include children observing others. Skill development should include tasks which progress from simple to complex to ensure effective skill learning. Moreover, concept and skill development cannot omit strategy considerations such as

decision making, refinement of skill, and repetition of tasks. Last, culmination should stress consolidation of material covered, which may include children observing others. For instance, dance and gymnastics sequences should stress a beginning, continuity of action, and an ending.

In order to determine if a student has been able to learn a skill, evaluation becomes the most critical component of skill teaching in movement education. Evaluation of a skill should include the what, why, when, and how of the skill. The what of evaluation includes: measurement of development; immediate, continuous, and long-range benefits; positive process to facilitate learning and development; informal tests and observation, guidance; determining strengths and weaknesses. Through evaluation the instructor should be capable of seeing "x" or the skill in the midst of other activities. The why of evaluation includes: to improve; to motivate; to encourage; to clarify. The when of evaluation should occur on an informal basis, through observations and discussions with the students. Evaluation can be conducted in two ways: **formative**: continuous observation of the teaching/learning process in order to remediate; **summative**: evaluation of the product tested at the end of a unit or year for final evaluation. The summative form of evaluation perhaps fails to give sufficient attention to the process of learning. The how of evaluation suggests that observation is important in order for the teacher to evaluate his or her program, teaching, and students.

The use of the movement profile to describe the subject's habits of body can be described as both a formative and summative type of evaluation. I feel the movement profile is more of a formative type of evaluation because it evaluates movement in numerous themes and is capable of describing how an individual arrived at their level. Areas of movement weakness and strengths are described through the profile. As well programming (or the process) can be geared from the profile. On the other hand, the

movement profile can be considered as a summative form of evaluation due to its flexibility to describe the product of movement in a theme. The movement profile is an extremely useful assessment and evaluation tool due to its ability to consider the processes and products of movement. The profile in my estimates is better used as a formative type of evaluation.

Stages of Learning

As in other areas of learning, people tend to learn physical skills in stages. Research has identified three stages people experience when learning a new skill. Initially, the cognitive stage occurs early in the stages as students make their attempts at understanding the activity to be learned (Rink, 1985). The student will have to convert verbal or visual directions that have been provided into movement behaviors. Rink states that during this stage the student has to understand the intention or purpose of the skill, analyze the situation, and devise techniques to fulfill the goal. This stage is marked by a large number of errors in performance, in which the nature of the errors tend to be gross (Magill, 1993). When learning the tennis serve during the cognitive stage, students must attend to every detail of the toss, backswing, contact, and follow-through. The instructor during this stage must provide information to help understand the nature of the task and its purposes. Further, instruction should be specific that will assist in correcting what was done wrong. Demonstrations, movies, films, and other audiovisual aids are useful introductions to a new skill.

The second phase is the associative phase. This stage occurs between the beginning and highest levels of skills. This phase of learning a skill consists of meaningful practice with appropriate feedback (Rink, 1985). During this stage, the learner can concentrate on the temporal patterning or timing of the skill and work on the refinement of coordination (Rink). At this stage, many of the basic fundamentals of the

skill have been learned. The errors are fewer and less gross in nature (Magill, 1993). Some learners are capable of detecting their own errors in performing the task. Learners of the tennis serve are working at their timing and refining the mechanics of a smooth performance. It is important during this stage that the instructor provides practice and appropriate feedback for the students.

The third phase of learning a skill is the automatic phase. This phase is characterized by an increase in the ease with which the skill is accomplished. The performer has achieved the sequence of movement through meaningful practice and performs the movement pattern automatically with consistent results (Rink, 1985). The individual does not have to attend to the entire production of the skill, but has learned to perform most of the skill without thinking about it at all (Magill, 1993). The instructor can utilize the automaticity to deal with other components of the task. For example, the use of game strategy and the conditions of play may become focal points.

Process of Skill Acquisition

Sherrill (1998) describes skills as acts or tasks that must be learned in order to be correctly executed. More specifically, Magill (1993) describes a motor skill as “an action or a task that has a goal and that requires voluntary body and/or limb movement to achieve the goal” (p. 7). A sport specific skill is a highly defined fundamental skill or a combination of several fundamental skills with a very specific purpose. Thus, skill acquisition has several common characteristics such as having a purpose, being performed voluntarily, and the requirement of the body or limb movement to accomplish the goal of the action of the task. Congruent with the stages of learning, people progress through three stages of movement during the process of skill acquisition. Basic movements progress to more complex movements and finally move to refined movement skills. Children experience this transition through the elementary school years. The basic

skills involve gross motor activities which require large muscle control (Wall & Murray, 1994). The large muscle control involves several muscle groups including the arms, legs, trunk, shoulders, hips, and back. Gross motor activities that require primarily large muscle control are developed through locomotion, balancing, and weightbearing. As children progress, some tasks will present a greater level of difficulty which will require a degree of fine motor skills. Fine motor skills require small muscle control (Wall & Murray). These complex skills utilize the fingers, hands, wrists, neck, toes, feet, and ankles. Last, specialized skills emerge as children develop and experience effective movement in a variety of sport settings. The refined skills involve specialized skills which require fine and gross muscle control (Wall & Murray). The refined tasks involve activities such as balancing on hands and completing cartwheels (Wall & Murray).

Development of Motor Skills

Motor skills acquisition is one of the primary responsibilities of the physical educator. The goal in teaching motor skills is the development of skillful performance. Being skilled in a particular sport involves three components according to Rink (1985). The quality of effectiveness, the quality of efficiency, and the quality of adaptation are part of what is meant by skillfulness (Rink).

The quality of effectiveness is goal-directed or objective movement. For example, a basketball free throw is effective if it goes in the basket. Motor skills are effective if they accomplish their purpose. The quality of efficiency describes the performance itself (Rink, 1985). A skill is performed efficiently when the action is mechanically correct for a given performer and situation. These are the best ways of performing the skill. Last, the quality of adaptation describes the ability of the performer to adjust to conditions surrounding performance (Rink). The quality of adaptation is critical to skills where changes in conditions are continuous during performance, such

as performing a forehand tennis stroke while moving to the right. Various skills require various abilities. Some skills are more concerned with efficiency, such as gymnastics, while others involve more adaptation, such as football. Therefore, instructors should know the intent and nature of the content in order to make decisions about how that content should be taught.

What are Sports and Games?

Wall and Murray (1994) describe sports as "a generic term meaning any formal activity in which there is an element of competition, either direct or indirect" (p. 272). Activities such as football, tennis, track and field, and swimming are considered sports. There exist two types of sports. Indirect sports have the participant competing individually. An example of an indirect sport is swimming. Direct sports would have the participant compete against an opponent, as in a tennis match. Games are competitive activities in which the individual or group objective is to win, while using strategies and skills to prevent the opposing individual or group from winning (Saunders, 1969, in Wall & Murray, 1994). In comparison, Morris and Stiehl (1989) define games as "activities confined by implicit rules and in which there is a contest between players in order to produce predictable outcomes" (p. 5). In short, games and sports can be considered volunteer contests with agreed-upon rules, a level of competition, and clearly defined goals. Games and sports come in a variety of shapes, sizes, and complexities.

Most physical education games are based on enjoyment and participation. Moreover, the physical education environment offers an excellent opportunity to develop and refine critical thinking skills. In order to participate in an organized sport game, students should have some capacity to think critically and problem solve. If an athlete lacks the ability to think critically while participating, a successful game experience may not evolve.

For the purpose of teaching problem solving, the attention should be on strategy games. Krulik and Rudnick (1983) state that for a game to qualify as a strategy game it must satisfy five criteria. First, the game should be for two or more players (Krulik & Rudnick). Second, the game must have a set of rules for the players to follow (Krulik & Rudnick). The rules serve to guide players in the development of their strategies as the play unfolds. Third, the rules should establish the goals for the players, and their individual goals should be in conflict (Krulik & Rudnick). Each player should be trying to win the game, as well as trying to block an opponent from winning. Fourth, the players should be able to choose their own path or action in an attempt to reach their individual goals (Krulik & Rudnick). The players can make their own decisions and devise their own strategies within the rules of the game. Each new move represents a new problem for the player to solve. Lastly, it should be apparent when one of the players has won the game (Krulik & Rudnick).

Purposes of Games and Sports

According to Morris and Stiehl (1989) games can be used to assist children to reach their maximum cognitive, social, emotional, and physical potential. Each contribution can be unique to each child's development. Although there is no agreement regarding the nature of game purposes, the following list provides expectations many instructors have when designing games. Games are utilized to enhance movement skill development. In order to participate in a variety of activities, children must learn basic skills such as running, jumping, turning, kicking, and throwing. As children are provided with more experience in the game setting, they establish the efficiency, ability, and versatility necessary for playing and enjoying many activities. Second, by providing successful and meaningful movement game experiences, we can contribute to a child's healthy attitude towards self and others. Research suggests that a child's self-image and

confidence are likely to depend on how skilled he or she is at certain games and activities (Morris & Stiehl, 1989). The third purpose of movement games is to promote physical fitness. Movement games provide the opportunity to contribute to children's strength, power, flexibility, postural alignment, endurance, and body composition. Fourth, movement games encourage the use of cognitive skills. Through movement games, children may participate in specific operations such as comparing and contrasting, categorizing, hypothesizing, inventing, synthesizing, decision making, identifying and solving problems, abstract thinking, and others (Morris & Stiehl, 1989). Fostering a sense of enjoyment and satisfaction is a fifth purpose of movement games. In movement games we can foster personal satisfaction, enrichment, and a sense of "aliveness" through activities that are enjoyable and motivating. Last, encouraging a sense of community can be developed in movement games. A sense of belonging allows children to take risks in a game setting and the opportunity to share with others.

Games Components

Common to most games and sports are a number of components including specific game skills, playing areas and rules, offensive rules, defensive rules, and players' roles (Wall & Murray, 1994). Within the component of fundamental games skills, Wall and Murray include manipulative and nonmanipulative skills. The manipulative skills include sending away, receiving, and traveling with (Wall & Murray). The nonmanipulative skills include jump, run, stop, and turn (Wall & Murray). In comparison, Morris & Stiehl (1989) feel that games include the following components: purposes, players, movement, objects, organization, and limits. Therefore, many ingredients are part of developing game understanding and skills. In terms of classroom teaching, Wall and Murray (1994) suggest that instructors should teach game skills within the context of the game, thus allowing students to gain an understanding of why

and when to use the game skills, as well as to grasp the parameters of the game. Instructors should not only teach the individual skills of a game, but also plan for activities in which students have to make decisions and use their skills appropriately.

How to Design Games

Prior to teaching games, instructors must be prepared and knowledgeable in terms of designing games. When dealing with persons with disabilities, experience and know-how are especially important qualities for the instructor. When teaching and designing games, Morris and Stiehl (1989) feel that three considerations should be kept in mind: (a) understanding the basic structure underlying all games, (b) modifying the basic game structure, and (c) managing the resultant game's degree of difficulty. In order to understand the structure of all games, their basic components and aspects must be examined. The basic components make up the fundamental parts of any game. As mentioned earlier, Morris and Stiehl feel that games should include the following components: purposes, players, movements, objects, organization, and limits. Purposes bring into focus what you are trying to accomplish and prescribe the commitment that you have to your games players. Instructors must decide who will be included in the game, and then to what extent and in what manner. Instructors should look at the types of movements, where they are to be performed, how much or how many are appropriate, their quality, and so forth. In terms of organization, three sets of decisions require attention in this category: the pattern, the number of players in the pattern, and the location of each player. The nature of the limits is related to what we expect of players and to the conditions imposed by the environment. Further, in the area of modifying a game's basic structure, the instructor begins manipulating a game's design. The instructor will expand the components of the model presented in Step One and add specific alternatives to create planned change. Modifying a game can include modifying the

purposes, types of movement, or numbers of players involved. The instructor has a wide range of variables to modify and create more interesting and challenging games. Managing a game's degree of difficulty deals directly with the continuum of skills, abilities, and needs that exists among the game's players. By modifying a game's degree of difficulty, we can provide experiences that challenge and satisfy all players. Morris and Stiehl (1989) suggest that in order to approach a game's degree of difficulty, a sequence of three action steps should be followed: (a) identify the factors that may limit a player's performance (the only factors which should be considered here are factors which the player can control); (b) diagram the task complexity spectrum, (task spectrum is a continuum of task descriptors that are sequentially arranged from less difficult to more difficult); and (c) begin to create tasks that vary in difficulty, (for example add tasks such as moving targets, different-sized balls, etc). It is important at this stage for instructors to have an accurate assessment of the student's skill level in order to avoid damaging confidence and self-concepts. In review, the process of changing games involves essentially three stages: understanding the basic structure of games in general, modifying that structure for a specific game, and altering the game's degree of difficulty.

Steps in Teaching Game Skills/Strategy

There is a limited amount of literature that explains teamwork concepts applicable to those with cognitive disabilities, such as player positioning, switching from offense to defense, and individual as well as team responsibilities while engaged in a particular sport. Most of these concepts are abstract for the autistic individual. Certain autistic individuals may never be ready to participate successfully in team sports. Integration into team sports must be determined by the instructor. Adult teacher aides, peer tutors or cross-age tutors, or cognitively delayed individuals who are developmentally ready to begin team sport instruction can serve as effective models to

students who may not be quite ready (Lavay, 1985).

Initial instruction given to the persons with cognitive delays must emphasize the fundamental skills involved in each sport. Successful performance of fundamental skills not only builds a strong sport skill foundation, but also indicates to the instructor those individuals who are ready to begin to participate in instructional strategy of sport. Fundamental skills can be taught through stationary practice or moving drills. In stationary practice, students perform the skill as taught using their own equipment and their own individual space. For example, passing a basketball against a wall would constitute stationary practice. Moving drills require students to apply skills learned during stationary practice either through interacting with other players or in situations involving movement around the playing area. A basketball example of a moving drill would be a dribble-and-shoot relay. Simple lead-up games can reinforce fundamental skills. During the introduction of simple lead-up games, the instructor must encourage players to work closely together toward the common goal of good play (Lavay, 1985). The fundamental skills should be developed into specific game skills as the class progresses.

It is during the initial stages of teaching that game formations are introduced. Getting special education students in various game formations is a daunting task for any instructor. Persons with disabilities have difficulty visualizing/representing formations; thus it requires careful teaching. Sherrill (1998) feels that lessons should teach students the names of formations and provide practice for getting into formations which begin small and become increasingly larger. Teaching instruction should provide verbal cues to groups of three to four students, followed by a count of 1 to 10 (Sherrill, 1998). Students should try to be in the new formation by the count of 10. Students should help anyone who is having trouble. This practice aids in improving social awareness and

cooperation among classmates. Circles and lines can be used to help beginners, however eventually students should be capable of success without floor cues (Sherrill, 1998). Further, in order to participate in games, structured formations must be learned. Thus, formations such as scattered or random formations should be avoided (Sherrill). Formations such as circles, lines, files, shuttles, target shooting, and square dance formations can be used (Sherrill). Within some of these formations, terminology becomes an important component. Sherrill suggests that teachers should use clockwise (CW) and counterclockwise (CCW) terminology. According to Sherrill this terminology avoids left-right discrimination problems and reinforces clock-reading skills. Game formations are an important component during the instruction of beginner skills in order for future sport success.

Before beginning actual play, Lavay (1985) feels that practice drills should be designed to simulate game conditions. Player movement should be encouraged while shooting and passing to simulate game conditions. When players are ready, more sophisticated drills may be introduced into practice sessions. Boundary areas should be made as visible as possible by arranging cones or flags on the field or court. Startzell (1981, in Lavay, 1985) suggested that the instructor walk the playing area with the players before actual play begins, explaining various boundary lines and areas.

An extremely difficult concept to teach persons with cognitive disabilities or autistic children is player positioning and area responsibility in relation to the ball or puck. When play begins, individuals will want to converge immediately on the ball or puck. Lavay proposes that cones can be used to mark each player's positioning, or perhaps physically guide the players to their positions on the court or field. An effective strategy used to discourage players from converging on the ball/puck is to have them freeze their movement upon hearing a whistle or a clap of the hands from the instructor

(Lavay). Players are then guided back to their positions (Lavay). This practice may need to be repeated numerous times until all individuals become aware of their positions and area responsibilities. Players must be consistently reminded to watch for the ball or puck while playing their assigned position. The individual should feel comfortable and gain confidence playing one position before instruction at a new position.

Understanding defensive strategies is also a necessary skill when participating in a game structure. Initial defensive fundamental instruction should consist of assuming proper stance, practising footwork, maintaining balance, and staying with an assigned opponent (Lavay, 1985). Defensive strategies can be taught by mirroring the instructor from side to side, back and forth (Lavay). More complex strategies can introduce two-on-two and three-on-three keep-away or chase games. To aid players in distinguishing between offensive and defensive play, different colored jerseys should be worn.

Within the game environment, switching from offense to defense or defense to offense can be overwhelming for those with cognitive disabilities. Strategies such as painting the baskets or goals different colors, with each team wearing the same colored jersey as the goal or basket towards which they are shooting, can be used (Lavay). Moreover, before actual play begins the instructor can bring the players onto the field or court and have them practise as a team, switching back and forth between offense and defense (Lavay). As a rule to aid in the smoother transition during play, Lavay suggests prohibiting fastbreaking after all steals, rebounds, or made baskets. The offensive team must wait for all players on the opposing team to be in their defensive positions before advancing the ball up the court. This rule allows players time to make adjustments from offense to defense. Players should be instructed that after a steal, rebound or made basket they are to pass the ball to a designated player who is responsible for dribbling the

ball up the floor (Lavay). Furthermore, instructors should also consider the fitness level of players when creating lesson plans. Thus, it is important that the instructor incorporate drills during practice sessions that raise the fitness and skill level of the players involved (Lavay). Teamwork among individuals must always be encouraged, with the instructor realizing that social praise in the form of a smile, handshake, or positive statement can be quite motivational. Positive reinforcement helps enhance performance levels of persons with cognitive disabilities.

Applications of all skills and strategies learned during stationary practice and skill drills comprise the bulk of any team sports unit. Once these skills have been introduced and refined, emphasis should be on learning rules and strategies of the game and how to combine the skills of all players into a team effort. Class should not be highly competitive. Rather, intramural activities should be provided for those students who wish to play the game in a more competitive form.

Task Analysis-Teaching Considerations

Folio (1986) suggests that an excellent skill for successful teaching with students with disabilities is task analysis. The physical educator needs to be able to task analyze motor skills into their components or small sequential steps in order to teach the skill to the student with disabilities. The more severe the disability, the more subtasks are necessary in teaching the skill. Tasks can be broken down into as many components as are necessary for the student to learn the task. Moreover, task analysis also involves the establishment of prerequisite skills for a particular task. This enables the teacher to: determine entry level for students with disabilities, or where to begin teaching; develop a sequential skill progression; establish and pinpoint behavioral objectives for mastering a goal; measure and document progress in small gains; and observe and note where weakness in performance of a particular skill exists (Folio, 1986).

An example of task analysis may be helpful for understanding how this technique is applied. Initially, the instructor should identify some terminal goals such as making a lay-up, shooting foul shots, and rebounds. After the goal had been chosen, the sequence of components for this goal should be developed. The teacher should ask what are the steps necessary to master this skill. In the lay-up example, the components may include: grasps ball properly, dribbles and bounces ball while stationary, dribbles the ball while moving, shoots ball one handed, etc. . Each component of the skill can be analyzed when going through the task. Further, prerequisite skills should be established, such as familiarity with a basketball, familiarity with the game, knows and recognizes a basketball. Folio (1986) feels that once the prerequisite skills are considered and the sequence has been arranged, instruction can begin, precisely at the point at which the student has mastered each component. The task analysis approach allows the teacher to pinpoint exactly the starting and ending point for instruction.

In order to become an effective teacher and be capable of analyzing tasks, Folio feels that instructors need to learn the proper sequence for motor skill teaching. This sequence will aid the instructor when designing games. This sequence involves planning, knowledge, and organization. Planning includes several steps: assessing needs, establishing priorities related to needs, designing activities, and developing a behavioral management strategy (Folio). Knowledge related to lesson content and the disability itself aids in pulling together the plan developed. Organization provides the basis for keeping the teaching sequence in order and running smoothly. Organization requires consideration of: class structure, equipment, regular and/or modified activities, and teaching strategies (Folio). In addition, to reiterate, Morris and Stiehl (1989) feel that games programs should be designed with these considerations in mind: purposes, planning, implementation, and evaluation. Purposes are formulated from one's beliefs

and values concerning such things as the nature of children, the usefulness of games, and the importance of certain types of subject matter (Morris & Stiehl). Purposes can include improving strength and endurance, improving self-confidence, or improving motor skills. Instructors should state clearly which purposes are important to his or her program. Planning requires that the instructor review stated purposes and decide which of those purposes to encourage in a game or series of games. Planning includes selecting equipment, arranging for use of playing area, scheduling games sessions, and organizing participants. Implementation means presenting the games successfully, which includes efficient use of time and resources. Evaluation is a search for particular kinds of information derived from the instructor's purposes or expectations. It may involve observing players' abilities to perform movement skills or asking them questions about whether they enjoyed the game.

Teaching Manipulation Skills

Manipulation skills are components of all sports and thus are part of any introductory sport lesson. Manipulation skills include sending-away skills, receiving skills, and traveling skills. Wall and Murray (1994) state that in all manipulative skills the body is used to control an object in a variety of ways. The object may become part of the body or it may remain separate from it. In some games, the sequence of skills used is receive-travel-send, as in hockey. In others, the sequence is receive-travel, as in football.

Sending away objects is perhaps the first manipulative skill children learn. There are two ways to send objects: one, throw the object using hands or an implement, such as a scoop; two, strike the object with hands, feet, head, or an implement, such as in soccer (Wall & Murray, 1994). Lessons should be designed to work on developing the sending skills of producing the right amount of force to send the object the required distance and positioning to send it to the desired place (Wall & Murray). In order to send

it to the desired place with the correct amount of force, targets can become essential teaching tools. Targets can be moving or nonmoving objects and positioned at various levels. Targets provide feedback for the student and are enjoyable for most students. A variety of equipment can be used for most sending activities. Moreover, Wall and Murray suggest that variety should be stressed so that the child develops versatility and an understanding of the fundamental skills related to all sending-away skills.

In order to send an object within a sport or games setting, an individual must first develop the ability to receive an object. There are two ways to receive an object: one, catch the ball as it travels through the air, either before or after it rebounds off the ground or wall, or even off another player as happens in basketball and football; two, trap, collect, or block the ball as it travels along the ground (toward and away from the body) or through the air (Wall & Murray, 1994). In order to be capable of receiving an object, an individual must be able to get in the right place at the right time, as well as being able to absorb or cushion the impact of the object as it arrives using different body parts. Lesson design should include activities which work on the positioning of players in relation to objects moving on the floor and in the air. For example, have a student toss a ball against the wall and move to catch it. Again, a variety of activities should be included so that children understand the fundamental skills of receiving objects.

Once the skill of receiving has been refined, most games require the participant to travel with the object. Wall and Murray (1994) propose that there are two ways to travel with an object: one, carry the object with hands or an implement; two, propel the object. Carrying an object requires being able to hold it firmly and shift it from one side to the other, as in a running back in football. In terms of propelling an object, the fundamental skills involved include: one, produce the appropriate amount of force and speed to propel the ball, yet keep it reasonably close to the body; two, travel various pathways; three,

change directions when traveling at different speeds (Wall & Murray). It is important for the student to be able to keep the ball close enough to the body so that the opponent cannot take it away, and still be able to travel at various speeds throughout the playing area. Furthermore, instruction should include activities that pay attention to details, such as changing direction, traveling different pathways, taking eyes off the object, lifting the head, and looking around the space (Wall & Murray)

Strategies for Major Game Forms

Werner (1989) presents a summary of the main strategies for each of the major game forms: net, invasion, and striking and fielding. Each game form involves offensive and defensive strategies. Werner feels that by teaching each game form through a generic approach initially, students learn the nature of each game. For example, the principles of penetration by moving into open spaces with and without the ball and marking a person or space on defense are the same for basketball, soccer and field hockey.

Werner feels that net/wall games ought to be presented to students first. The strategies seem to be more easily understood and the games are less complex socially, most involve few players compared to the more complex, team-oriented invasion and striking/fielding games. Strategies for invasion games are far more complex because they often require players to perform offensive and defensive maneuvers in open playing conditions where situations change rapidly (Werner). Thus, invasion games should be incorporated into programming following net games. Striking and fielding games involve two opposing teams which take turns to penetrate the opposition territory by striking a thrown ball into play. The defense attempts to field the ball and put the batter/runner out. This form of game should be introduced last because it involves high social interaction and team-oriented cooperation.

For the instructor teaching physical education, it may be helpful to group the main game forms according to their complexities. Initially, instructors should focus on low-organization games. The low-organizational games, which bear little resemblance to formal games, emphasize locomotor and nonlocomotor skills, make little demand on the players in terms of roles, strategy, and rules, and provide opportunities for developing body management skills of running, dodging, swerving, guarding, and avoiding (Wall & Murray, 1994). Low-organizational games should include introductory elements of competition, such as chasing or being chased in a group (Wall & Murray).

Second, lead-up games are more complex and have a greater resemblance to more formal games. The lead-up games combine selected nonmanipulative and manipulative skills in a game structure, they include role playing (offensive and defensive roles), as well as require an understanding of strategy fundamentals to the related game form (Wall & Murray). Wall and Murray believe that low-organization and lead-up games focus on the fundamentals of games, and thus form the core of the elementary school games program. These games can be adapted easily to meet the skills of the class and relate to the objectives of the lesson. Last, formal games are reached when children's locomotor, nonlocomotor, and manipulative skills develop, along with their knowledge of game concepts (Wall & Murray). Within a formal game, players have to adapt to the demands of the game, specific rules have to be learned, the number of players must be established, and the equipment and playing area standardized (Wall & Murray). In order to have a successful experience in a formal game, the players, teammates, and opposition, should be of an equal level not only to improve skill level, but also to prevent some players from dominating the game. Wall and Murray further add that, due to the challenge that formal games present, they should have very limited place in the elementary school program.

Teaching Styles

Teaching mainstream children seems to be becoming a more challenging task in these days of economic cutbacks, changing curriculum, and fiscal responsibility by the school boards. Class sizes are becoming larger and preparation time is being reduced. For those instructors within the special education class, the environment poses an even more challenging and diversified task. Teaching without the proper qualifications or experience can lead to an inadequate academic experience for both the student and the instructor.

For those students with mental retardation, severe learning disabilities, autism, severe emotional disturbances, hyperactivity, and inner or receptive language deficits, the command style of teaching is usually prescribed (Sherrill, 1998). The purpose of the command style is to elicit a response or many responses from one or more persons in a given subject matter (Mooston, 1966). The command style by definition "is the style which focuses on the teacher and the subject matter" (Mooston, p., 23). The teacher is the one who may make decisions concerning physical activities, as well as the one who determines the social-emotional climate in the class (Mooston). The student is expected to adhere to the physical limitations set, determined, and controlled by the instructor (Mooston). The physical limitations imposed on the student may either be organization or movement. An assumption underlying command teaching is that when certain stimuli exist, the desired responses will occur. Therefore, the teacher will present stimuli which will produce the expected results. The roles of the teacher in the command style teaching method are to possess knowledge and tell things to others. The role of the student is to listen, to absorb, and to respond to the teacher's stimuli. Furthermore, assumptions underlying the command style include also the expectations of progress and growth along the developmental areas of physical development, social awareness, emotional growth,

and intellectual development. Physical development will occur as a result of fluent participation in the activity directed by the teacher. Social awareness will result from the student's adherence to the rules and specifications imposed by the teacher. Emotional growth will occur as a result of the individual's assumed acceptance of his role as a member of a group as perceived and evaluated by the teacher. Intellectual development is assumed, since the student's acceptance of what the teacher offered and his performance of what the teacher requested both require some cognitive involvement understanding of what the teacher wants.

Sherrill (1998) outlines the basic premises behind the most effective teaching style for autistic individuals, the command teaching style. The learning environment should include small spaces with clearly defined boundaries and floor spots (Sherrill, 1998). Equipment should always be set up in the same location (Sherrill). The starting routine entails students going to assigned floor spots and waiting for the teacher to give the start cue (Sherrill). Presentation of new activities includes various steps: teacher states objectives, teacher designates student leaders, teacher puts students into formation, and teacher provides directions as well as demonstrations (Sherrill). The execution of the activity instructs the students to: practise in formation prescribed by teacher, wait for his/her turn and follow set routine for going to end of file, start on signal and move in unison with peers to verbal cues, or drum, and to stop on signal (Sherrill). Lastly, feedback has the instructor move about the room and offer individual praise, and identify and correct movement errors through verbal cues or modeling (Sherrill). Sherrill proposes that the guiding principle for a teaching environment is to facilitate progress from the teaching style and environment that are most restrictive (command style) to the one that is least restrictive (motor creativity). Some students who have difficulty coping with the available freedom in the gymnasium will experience the command style of

teaching throughout their schooling.

It should be remembered that teaching styles should be flexible so that different approaches can be taken with the student with autism or other disabilities. Students have their own learning styles, especially the autistic student. Unless the teacher is able to match teaching style to the student's best learning style, the rate of learning may be negatively affected (Folio, 1986). For example, if a student has auditory processing difficulties and requires a considerable amount of visual cues to learn a skill, the flexible teacher will take this into account and add more visual aids and cues in the teaching process.

Physical Education Classroom Structure and Organization

The structure and organization of the classroom are important considerations for effective teaching and for beneficial participation by students with disabilities. Classroom organization may require some modifications to accommodate individual differences. A list of potential modifications will be discussed.

Whether a physical education class is taught indoors, outdoors, or both, the environment should be welcoming and as free as possible (Folio, 1986). Playing areas should be clearly designated with more room available for different classroom sizes. Disability access to the gymnasium should also be included within the facilities. Most importantly, students should feel that the class is accepting and supportive, as well as an environment to achieve success (Folio). Teachers should develop an atmosphere of acceptance in the class, emphasizing the abilities of each student and the positive contributions each can make to the class. Along the same lines of classroom environment, classroom organization should allow students to have successful experiences in physical education. There are many ways of organizing a class, and if a teacher sees that one form of organization is not working, other forms should be tried

until the right combination of organization and procedure is discovered.

Furthermore, personal space is a variable which can affect the learning experience in the physical education class. Personal space is a form of organization where students are free to move in their own personal areas, where they can sit, stand, lie down, or move without touching another student. This eliminates having to keep students in lines or other formations. Folio (1986) feels that there are many benefits of using the personal space concept: students feel more secure when in their personal space than in lines or other formations; students feel freer to explore movements and skills while in their personal space; the teacher can work with other students individually with less observation from other students; students can work more at their own pace, since they feel more confident. The personal space allows the teacher to individualize instruction, thus allowing each student to perform the standard skills in the most functional manner possible for him/her.

Additional modifications for the instructor include peer teachers, volunteer aides, and station teaching. Peer teachers provide an excellent strategy for modeling behavior skills for students with disabilities. They also offer a wide variety of resources for the physical education teacher. Volunteer aides are not the same as peer teachers but can act as excellent support services. Last, station teaching allows the students to move from station to station performing sets of specified skills or exercises (Folio, 1986). Station teaching permits the students to work at their own pace, teachers can more closely monitor stations, and students may return to a particular station to master a task. Various factors such as: room safety, available equipment, enough personnel, creativity in designing stations, and instruction at each station are factors which need to be considered. Station teaching may require plenty of time and effort; however, Folio feels the benefits are well worth the preparation. Keep in mind that station teaching can be

used with any level of student.

Teaching Enablers

In addition to the specific teaching style that is recommended for the autistic student, the use of enablers can help students develop independence within the classroom. Enablers are changes in an environment to eliminate excess stimuli, adaptations of materials to meet individual needs, modifications to sequences, and so forth. There are nine categories of enablers which the instructor can keep in mind when teaching a specific skill. They are essential for developing an individual's independent skills.

Consistent routines and schedules are necessary for providing the best learning situation for an individual with autism (Wagner, 1989). Activities should be scheduled the same time each day (or week) and their pictures placed in order on the schedule board. Establish review schedule boards which would explain any changes in routine. The success of programs for individuals with autism often depends on how consistent these programs are and how they are presented to each individual. Second, providing clear instruction or directions when teaching individuals with autism is crucial to their understanding of what is expected that day (Wagner). The autistic individual needs to know exactly when the event is going to occur and strategies to cope with waiting until the event begins. Third, staff or family members can plan for stimulus cues (or programmed environmental cues) to eliminate confusion and the necessity for having verbal instruction (Wagner). Some autistic individuals have difficulty processing verbal instruction and need to rely on environmental cues. Fourth, a desensitization procedure may be necessary if an obsession interferes with programming. A desensitization procedure is the gradual introduction or exposure to the particular object or event (Wagner). During this exposure, the individual is reinforced for remaining calm while

the object is near or the event is occurring (Wagner). Exposure time to the feared object or event increases following the initial exposure. Providing environmental adaptations is also an applicable enabler. Adapting the environment and materials to an individual's needs often creates a more inviting learning situation. For example, eliminating loud noises, bright lights, and decreasing the number of people in the gym can make for a more successful learning situation. Further, augmentative communication provides alternate methods of communication for those autistic people who are nonverbal or minimally verbal (Wagner). The augmentative communication system must be used across all settings and be functional for the individual. Providing the augmentative communication system provides the individual with a better way to communicate wants and needs. The use of sign language, communication boards, or electronic devices are examples of augmentative communication systems. Pairing an autistic individual with a nondisabled peer is also an enabler. Peers can aid the individual with autism understand social rules, help to integrate the individual into larger peer groups, and may enhance self-esteem. The peer advocate can help integration be successful. Motivational procedures is our final enabler. With careful analysis of individual likes and preferences, motivators can be found and used effectively. Each student will have to be assessed for motivators.

Critical Thinking Skills

Most critical thinking discussion and attention are focused on traditional classroom settings. McBride (1991) feels that if students are to become effective thinkers, then attention must be paid to all areas of the curriculum. In particular, McBride suggests that the physical education setting provides great potential for critical thinking. If students cannot think critically and problem solve during a game scenario, successful participation in a game/sport environment will be difficult.

McBride proposes that critical thinking is reflective thinking used to make reasonable and defensible decisions about movement tasks or challenges. McBride further adds that critical thinking is a matter of directing our minds along paths more likely to yield sound products of thought-sound beliefs, decisions, solutions to problems, plans, policies, and so on. Physical education provides ready opportunities for the use of a variety of established thinking strategies, such as problem solving strategies metacognition strategies and strategies for building deep understanding. Lipman (1988) describes critical thinking as skillful, responsible thinking that is sensitive to context, reliant on criteria, and self-correcting. In addition, the hands-on nature of physical education offers a concrete context for discovering the payoffs of critical thinking that other subjects lack. Second, critical thinking offers a common link for physical education and other subject areas (Lipman). It is untrue to suggest that physical performance can truly be separated from higher order cognition. Physical performance over the longterm necessarily involves a fair amount of reasoning, reflecting, strategizing, and planning in all critical thinking performances. Higher order thinking outside the realm of sport and recreation can transfer quite easily to physical performance, and vice versa.

Engaging students in critical thinking in physical education is a demanding pedagogical task. It necessitates a great deal of planning, as well as timing when to provide students with domain-specific knowledge, and teaching students to portray favorable dispositions (Cleland & Pearse, 1995). Teachers should be prepared to provide students with the information and skills necessary to think critically and make informed decisions both in and out of physical education class. For critical thinking to occur, the learner must first be given the opportunity to inquire. McBride (1991) states that only during inquiry can critical thinking skills be activated through such cognitive functions as

comparing, contrasting, drawing inferences, and testing hypotheses. To be in a state of inquiry, the learner must move away from cognitive acquiescence (to accept passively) and toward cognitive dissonance (to create an active disturbance); (McBride). The learner needs to assume responsibility for thinking for himself or herself. The student engages in critical thinking on their own behalf. McBride considers the critical thinking process as consisting of four loosely grouped components or phases: cognitive organizing, cognitive action, cognitive outcomes, and psychomotor outcomes.

Cognitive organizing is the first and sometimes most difficult aspect of critical thinking. It entails recognizing the nature of the problem or challenge. Higher order thinkers have the ability to concentrate on the correct problem, whereas poorer thinkers often fail to take into account information in the environment that is crucial to solution generation (McBride). Cognitive action refers to the ability to use information generated during the organizing stage to refine responses, make judgments, and formulate hypotheses (McBride). During cognitive outcomes, the individual would experience testing the hypotheses generated during the cognitive action phase (McBride). This moves the learner into the cognitive and psychomotor outcomes phases of the critical thinking process. A student can test a hypothesis cognitively or through actual motor performance. In this phase, the learner performs the movement skill and then assesses the outcome (McBride). Based on the performance, the learner may want to ask different questions, modify judgments, formulate and test new hypotheses (McBride). There is more to critical thinking than just making decisions about movement tasks or challenges. McBride feels that critical thinking involves metacognitions. Metacognitions serve to direct the selection, sequencing, and execution of the previously described cognitive operations as the learner seeks to make reasonable and defensible decisions about movement tasks (McBride). The ability to think about one's thinking is a difficult task.

but represents one characteristic of an expert critical thinker. In order to facilitate critical thinking within the physical education environment, students must be exposed to information and knowledge relating to and about movement and movement activities. Further, McBride (1991) feels that learners must be provided with requisite knowledge about the skills of a task before they can be expected to think critically about their performances. The physical education environment is rich in opportunities for critical thinking.

The probability of an autistic student developing higher order or critical thinking skills is highly unlikely. A large percentage of autistic students are cognitively challenged; roughly 75% are classified as mentally handicapped. The processing difficulties (take in too much information, take in too little information, or mix up information taken in) experienced by autistic students make critical thinking almost impossible. Due to their inability to process information quickly, low level of intelligence, and their short attention spans, the ability to experience the characteristics of critical thinking such as reflecting, evaluating, and inquiry cannot be achieved by autistic students. Thinking critically involves many characteristics which cannot be understood by autistic students. In addition, other qualities associated with autism, such as impairment in communication, poor social interaction, and repetitive behaviors, pose large obstacles to critical thinking.

Rapport and Teaching

In order to be considered an effective teacher, an instructor must possess many interpersonal qualities. One of those qualities which come to mind is the ability to develop rapport with students. When working with students with disabilities, the importance of developing rapport is even more significant. The student with disability needs to know that the instructor is a friend who he/she can trust and rely upon in the

class. If rapport is not developed with the student with disabilities or with any student, instruction and a willingness to learn will be negatively affected. Lowman (1994) states that teachers high in the ability to create interpersonal rapport are viewed as positive, democratic, and predictable; whereas those low on this dimension would be seen as negative, autocratic, and capricious. Developing interpersonal rapport can affect the instructor's role as a motivator of students both within and outside the class. A study examining teaching awards at an American university suggests that student opinions of outstanding teaching result from combinations of presentational and interpersonal skills/rapport (Lowman). Within that study the importance of rapport building was visible even within the higher levels of education in which students are independent learners. Thus the importance of rapport building with a younger, dependent class cannot be overlooked. It is important to note that the instructor acts as both performer and motivator in the class.

Keeley, Shemberg, Cowell, Zinnbauer (1995) define three characteristics describing rapport: empathy--teacher accurately and sensitively communicates an understanding of students' experiences and feelings; respect--teacher communicates a deep and genuine caring for the students as persons with human potentialities; genuineness--teacher tries to be herself or himself, avoiding being "phony", playing a role or being defensive. Perhaps the most important way that teachers can achieve these qualities is through active attending and listening skills (Keeley et al., 1994). Active listening, such as direct eye contact and proximity to the talker ensures that students know they are sufficiently valued to be heard. In agreement, Folio (1986) feels that the personal quality of empathy is important for enhancing the motor learning environment for students with disabilities. This quality, states Folio, enables the teacher to motivate the student. Empathy gives the student the impression that the teacher wants the student

to achieve and be successful.

How to Develop Rapport?

Many students decide the value of a program based on first impression. Thus, in order to convince the learner the value of a program, instructors need to communicate good intentions immediately. At a first meeting, be ready to start breaking down existing barriers towards learning and preventing new ones from forming. For example, try to convince the student the value of learning a new task and relate it to his/her life.

Second, establish a foundation for a productive relationship with the learner at an initial learning meeting. This can be done through such positive behaviors as smiling, nodding your head affirmatively, leaning forward slightly toward the interviewee, ignoring distractions, and using timely positive verbal reinforcers that demonstrate empathy (i.e., "Yes, I can understand that", "That's interesting"). Further, the opportunity to reveal a little about oneself can contribute to developing rapport with the student. Sharing a common experience or interests can create a bond with your learner. When a bond is developed, a level of trust is established between the student and the teacher. Moreover, being an active listener is also a method of developing rapport with your student.

Teachers can actively attend and listen by using nonverbal skills such as making good eye contact, getting physically close to the student, and slightly leaning forward (Keeley et al., 1995). Helpful verbal skills include the use of open-ended questions, reflections of feelings and experiences, paraphrasing of content, and summarizing of statements.

There exist other methods of developing rapport and gaining the trust of a student than the methods provided above. Each teacher has his/her own personal characteristics and ways in which to develop rapport. Therefore, it is important that instructors discover for themselves the most effective method they can use to develop

rapport with the student. Being capable of developing rapport with students can make the learning environment a much more enjoyable place to work.

Working with autistic students requires that an instructor develop a high level of rapport with them. Due to the instability and anxiety associated with autism, a high level of rapport is needed between teacher and student. Without a sense of trust and comfort with one another, the autistic student may discover a threatening and uncomfortable learning environment. Mentioned earlier, Keeley et al. (1995) define three characteristics describing rapport. Two of the characteristics, respect and genuineness, are significant qualities which should be shared between the teacher and the autistic student. Respect communicates a feeling of care for the child and genuineness implies that the teacher tries to be him/herself. Genuineness demonstrates that the teacher is making an effort to treat the autistic student equally. Teachers should be honest with their feelings because students will pick up unwanted feelings. An excellent teaching tool for any teacher working with autistic students is to develop a level of rapport with the students prior to establishing any program.

Health and Physical Education-Government Curriculum

The information included within this section will describe the policy of the Ontario Ministry of Education and Training with regard to physical and health education in the Intermediate division. The information has been taken from a 1978 guide, which may seem to make it outdated. However, curriculum guidelines do not seem to change significantly, and a more recent edition is unavailable. The last edition of the curriculum guidelines which included physical education was from 1988. The latest edition of the common curriculum guide, 1995, contains no guidelines for physical education instruction. The guidelines are intended to assist individual teachers and local curriculum committees in developing courses of study, and it describes the options and

variations that may supplement the required components of these courses.

The general policy concerning physical education (Ontario Ministry of Education and Training, 1978) states that physical and psychomotor development are major aims of physical and health education. Teachers, principals, and other program planners for grade 7 and grade 8 should recognize that in order for students to achieve significant improvements in these areas, a minimum of three instructional activity session per week are required. In grades 9 and 10, credit courses in physical and health education must be available to all students. The principal should ensure that students are given all possible encouragement and guidance in making physical and health education an integral part of their program.

The curriculum guideline of 1978 (Ontario Ministry of Education and Training, 1978) provides the aims of physical and health education for the Intermediate Division. Those which are relevant to this study will be noted:

1. Expose students to a variety of enjoyable activities and experiences related to physical and health education.
2. Help individuals develop a sound understanding of their total development, and enable them to attain positive self-images.
3. Help students improve their physical and motor fitness through activities designed to develop stamina, strength, endurance, flexibility, balance, speed, agility, coordination, and power.
4. Allow Intermediate students to experience social relations that will encourage desirable attitudes and behavior, especially in regard to sports, respect for rules, and cooperation with others.
5. Provide opportunities for Intermediate students to solve problems and make personal decisions related to their intellectual, social, physical, and emotional

development.

6. Help students attain levels of skill development that will allow them to participate more competently in physical activities.

The curriculum states that there are seven broad categories of activities which make up the physical education curriculum in the Intermediate Division: physical fitness activities, team sports, individual and dual activities, gymnastics activities, dance, outdoor education, and aquatics. The area of team sports activities is the main focus of this present study.

Team sports activities are excellent components of physical education programs. They are widely enjoyed by students and allow maximum class participation. Many team sports can be played both indoors and outdoors. Often, a minimum of equipment is required. Effective play in most team sports requires a high degree of physical fitness. Team play involves the sharing of responsibilities and goals among players and encourages meaningful group interaction.

Teachers should attempt to follow a logical sequence of skill progression for team games and, where possible, should use lead-up games and games of low organization to help introduce new skills. The rules of team games should often be modified to suit students, facilities, class size, and available time. Where rule modification have been made, students should be made aware of this, and the proper rules should be made known. Maximum participation, enjoyment, the improvement of personal skills, and the development of physical fitness should be key objectives.

Evaluation, according to the curriculum guidelines, should assess program effectiveness and student achievement. A valid and effective program in physical education is one that accomplishes its objectives. If, for example, the goals of the program were to increase physical fitness, then pre-and postprogram evaluation of the

fitness level of the student would reveal if it did or did not improve. In terms of student performance, various aspects should be included: levels of physical fitness; skill levels and degree of improvement; attitude, participation, and enthusiasm; acquisition and application of knowledge; understanding of the principles of movement; and interaction with peers. A variety of techniques of evaluation can be used in physical education. The following are some techniques that can be effective in assessing specific areas: for skill development--checklist, ratings (1-10), grading, assignments; for acquisition and understanding of factual information--written quiz, oral quizzing, performance task; for attitude, participation, enthusiasm--usually a subjective appraisal.

It is the responsibility of the physical and health education teacher in the Intermediate Division to provide programs that will enable all students to participate in physical activities within the limits of their capabilities. Prescriptive teaching or IEPs (Individualized Education Plans) designed specifically for that person will provide the flexibility necessary to accommodate individuals with particular disabilities or temporary limitations. The teaching professionals will determine the extent to which programs can be adapted. These adapted programs should be centered around:

1. Increasing skill in basic motor movements;
2. Achieving the highest possible level of physical fitness;
3. Stimulating a desire for continued improvement in fitness and skill;
4. Improving body image;
5. Helping the student acquire a feeling of value and worth as an individual;
6. Giving the student with disability an understanding of his or her disability and the limitations it imposes, while emphasizing his or her potentialities.

Government Curriculum for Basketball Instruction

The basketball program at the level of elementary school should promote the

development of the fundamental skills. These skills are an extension of the manipulative skills and games experiences in the primary division. At the end of the teaching block, the students should be ready to play a game to consolidate the skills presented in the lesson. The objectives of the basketball curriculum set out by the provincial government (1988) include:

1. To enhance the child's psychomotor development through a variety of experiences emphasizing running, jumping, passing, dribbling, shooting and defensive skills in basketball;
2. To develop and maintain a high level of physical fitness through a vigorous and varied program of sports skill development in basketball;
3. To provide opportunities for personal satisfaction and enjoyment through physical activity;
4. To provide an opportunity for enjoyment of the game of basketball as an outlet for leisure time interests;
5. To promote desirable social growth by encouraging fair play, sportsmanship, and consideration of others in cooperative and friendly competitive activities;
6. To enhance cognitive growth through an understanding and application of the basic sport skills rules and strategies in the game of basketball.

A total of 12 lessons are a suggested time allotment for the unit on basketball. The 12 lessons are composed of six areas of concentration; passing, dribbling, shooting, rebounding, defence, and games. The instructional parameters for the present do not and cannot follow the guidelines provided by the government. Much more instruction time is necessary for the high-functioning autistic female in this study. Perhaps 3, 4, or 10 more lessons are required for the learner/participant in this study to refine one basketball skill needed for a game situation.

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The Progressive Conservative government has implemented new province-wide curriculum (1998) in an attempt to create an exciting new learning environment. The new curriculum guidelines in the area of Physical Education will be reviewed within this section of the paper. Objectives, teacher and student roles, evaluation techniques, and so forth will be touched upon in the following section.

The new curriculum presents three main objectives of the new physical education program. Through the health and physical education curriculum (Ministry of Education, 1998), students will develop:

1. An understanding of the importance of physical fitness, health, and well-being and the factors that contribute to them;
2. A personal commitment to daily vigorous physical activity and positive health behaviors;
3. The basic movement skills they require to participate in physical activities throughout their lives.

The curriculum states that teachers are responsible for developing a variety of appropriate instructional strategies that will involve students actively in the curriculum, while meeting a variety of needs. Teachers should bring enthusiasm to the classroom and should model healthy living in their own lives to encourage students to recognize the value and relevance of what they are learning.

The role of the student is also outlined within the document. Students in the physical education classroom should understand that they have responsibilities to their own learning, which increase as they progress through school. Those students willing to make the effort required and able to apply themselves soon learn that

there is a direct relationship between achievement and hard work. These students will become motivated, self-directed learners, regardless of their circumstances.

Strands in the Health and Physical Education Curriculum

The curriculum's major areas of knowledge and skills are organized into three strands:

1. Healthy living includes healthy eating, growth and development, personal safety and injury prevention, and substance use and abuse.
2. Fundamental movement skills include locomotion/traveling, manipulation, and stability.
3. Active participation includes physical activity, physical fitness, living skills, and safety.

The primary strand which is of most concern for this study is the development of fundamental movement skill. Active participation is a second strand which will be considered in this study.

Health and Physical Education for Exceptional Students

For those students who require adaptations to meet their individual needs, an Individual Education Plan (IEP) should be developed and maintained for the student. In health and physical education, exceptional students may need a variety of modifications both to the program itself and to the learning environment. These modifications may include:

1. Facilities that allow for the mobility of students with physical disabilities;
2. Equipment modifications that enable all students to perform to their full potential (e.g., increasing the length of a scoop handle to enable a student who uses a wheelchair to reach the floor);
3. Program modifications (e.g., altering the method of instruction);
4. Assessment and evaluation strategies that accommodate a variety of learning

styles and needs;

5. Encouraging as much student participation as possible in planning, instruction, assessment, and evaluation;

6. Using support systems extensively.

The curriculum suggests that students can meet curriculum expectations in a variety of settings and with a broad range of equipment. Teachers are encouraged to use various school and community facilities for their programs--schoolyards, soccer fields, baseball diamonds, football fields, swimming pools--and to help students develop specific skills through a variety of activities. Moreover, teachers can use equipment to focus on students' specific skill development and to vary physical activities. When supplies are limited, teachers will have to be resourceful to ensure that each student has opportunity to use various types of equipment.

Achievement Levels

There exist four categories of skill level in health and physical education within the new curriculum: understanding of concepts, movement skills, active participation, and communication of required knowledge. For each of these categories, there are four levels of achievement. These levels are brief descriptions of degrees of achievement that teachers will use as the basis for their assessment of each student's work. Teachers should use the descriptions to identify the level at which a student has achieved a particular expectation, or a group of expectations, in the appropriate category of knowledge or skills. For example, if the student communicates most of the concepts taught, requires no encouragement to participate, and usually performs the skills as described, the student's achievement level would be at level 3. The characteristics given for level 3 represent achievement that is considered to be the standard for the grade.

CHAPTER THREE: METHODOLOGY AND PROCEDURES

Research Design

The design of this study followed the theoretical guidelines of a qualitative and heuristic approach. It was qualitative because the project centered around the in-depth observation and description of one high-functioning autistic student, in which experience in a game setting would be studied. Having a better understanding of her condition, behaviors, body habits, and movement patterns would lead to a better educational experience for herself and her instructors. Describing my experience in the study through the use of a journal and relating it to literature provides support for the heuristic aspects (ie., to the development of learning strategies).

The research project is based in the fundamental themes of a qualitative research project. According to Bogdan and Biklen (1992), qualitative research has the following five features: (a) the natural setting is the data source and the researcher is the key data collection instrument; (b) it attempts to describe and only secondarily to analyze; (c) the concern is with the process, that is, with what has transcribed, as much as with product or outcome; (d) its data are analyzed inductively, as in putting together the parts of a puzzle; and (e) it is essentially concerned with what things mean, that is, the why and how as well as the what. The qualitative case study was chosen due to its ability to provide rich and detailed accounts of the experiences of the autistic female and the instructor. The qualitative case study provides a research method which allows for flexibility and takes into account many of the variables (i.e., relationship between researcher and subject) which may not be visible to the reader.

Within qualitative work, there exist themes which help to elaborate its concepts. The qualitative research methods used in this study include the themes of: detailed and thick description; in-depth inquiry; direct quotations capturing people's personal

perspectives and experiences; personal contact and insight-the researcher has direct contact with and gets close to the people, situation, and phenomenon under study; researchers' personal experiences and insights are an important part of the inquiry and critical to understanding the phenomenon; unique case orientation which assumes each case is special and unique; and open to adapting inquiry as understanding deepens and/or situations change.

To tackle the research problem, data had to be collected and analyzed. The case study was the major source of information. Data were collected in an ongoing process when the researcher and subject had available time together. Due to personal and health reasons, the location for data collection varied.

I believe that by examining the literature and completing observation work within this case study, I had the ingredients to answer the questions related to the problem statement. The researcher's own experience and insights will also be included and not overlooked.

The following section will describe the research design and the sampling procedures utilized. The data collected during this study were analyzed using content analysis. The content analysis was transformed into movement profiles and strategies that can be incorporated into a classroom setting. A comparison of curriculum guidelines and goals between provincial standards and those of the researcher were also considered.

Research Description and Approach

The research design for the project is the case study. The case study is a form of descriptive research. The case study gathers a large amount of information about a specific phenomenon such as one or a few subjects (Thomas & Nelson, 1990). The case study is used in qualitative research and is sometimes called nonexperimental research.

Nonexperimental research is used when description and explanation are sought, when it is not possible or feasible to manipulate the potential causes of behavior, and when variables are not easily identified or are too embedded in the phenomenon to be extracted from the study. Descriptive research is inductive in nature, in which the results are presented qualitatively, using words and pictures rather than numbers. Researchers in a qualitative case study are interested in insight, discovery, and interpretation rather than hypothesis testing (Merriam, 1988). Merriam states in summary that the qualitative case "can be defined as an intensive, holistic description and analysis of a single entity, phenomenon, or social unit. Case studies are particularistic, descriptive, and heuristic and rely heavily on inductive reasoning in handling multiple data sources" (p.16).

The type of case study carried out in this study is a combination of descriptive and evaluative. A descriptive case study in education is one that presents a detailed account of the phenomenon under study, as well as presenting basic information about areas of education where little research has been conducted (Merriam, 1988). Innovative programs and practices are often the focus of descriptive case studies. This research project will present a detailed account of the case under study. Potentially useful teaching strategies/recommendations/frameworks can be created to aid the classroom instructor in dealing with this phenomenon (or student).

The primary purpose of the evaluative study is to use the data to evaluate the merit of some practice, program, movement, or event (Thomas & Nelson, 1990). Merriam (1988) further adds that evaluative case studies involve description, explanation, and judgment. The evaluation of the program (i.e., curriculum, strategies, framework) the researcher completed with the case may become useful information for the teaching profession.

Processes Within the Research Design

Within this study, I investigated the experience of a high-functioning autistic girl developing game structure strategies through structured, individual programming. The autistic student had a university graduate student (myself) completing the programming on a one-to-one basis. I, as the researcher, modified and completed activities which were set out by the school physical education instructor. Integration with other classmates was an additional goal of the study. Integration allowed me to observe the interaction of the autistic student with other students. Furthermore, I assessed the effects of incorporating social stories into the learning environment.

Skill development and refinement were the main foci of the study. I worked on the fundamental skills of the activity which were being introduced within the class. For instance, when basketball was the scheduled activity, skills such as dribbling, passing, and shooting were refined and evaluated. When I felt that Jane had reached a level of proficiency with the fundamental skills, I introduced lead-up games. In the basketball example, I sequenced activities such as receiving a pass, then dribbling or shooting. The activities were attempted to be completed with other students as much as possible to encourage social interaction. If Jane was capable of developing and refining the tasks set out during the class, the possibility of participating within a formal game environment might emerge. Examining the format of basketball instruction provided by provincial curriculum guidelines, this study followed similar steps when instructing sport-related skills. Therefore, the potential for transferability to other related studies is possible. Moreover, prior to some classes, social stories were introduced to Jane. A social story is one method of assisting a person to deal with events that are predictably stressful (Leuchter, 1994). The social stories attempted to prepare Jane for a sequence of events that she had difficulty dealing with during the upcoming class, as well as any

possible changes that might arise. For example, the student might encounter an anxious time when he/she is required to change for the class or when a transition is made from individual work to group work. The social story may allow the transition to be smoother and acceptable. Data were recorded following each session together, so that information was not forgotten. Personal reflections were included to describe the feelings and opinions of the researcher.

Selection of Participant

Within this study, the researcher examined whether individualized physical activity programming aided in the development of game structure strategy for a high-functioning autistic female. Therefore, the unit of analysis, or the "case" within this study, was a high-functioning autistic female. The key factor in choosing the unit of analysis is to decide what it is you want to be able to say about something at the end of the study (Merriam, 1988). Merriam further adds that prior to any sampling procedures the researcher must first identify the case.

The most appropriate type of sampling necessary for this case study is nonprobability, of which the most common form is purposeful. Within purposeful sampling is the notion of criterion-based sampling. The sampling procedure used in this case study approach is criterion-based sampling. Criterion-based sampling requires that one establish the criteria, bases, or standards necessary for units to be included in the investigation, and then find a sample that matches the criteria (Merriam, 1988). There exist several types of sampling forms from the criterion-based techniques. The criteria within this project include age, experience in a physical education class, exposure to a number of game activities, and the diagnosis of autism. Generalizability of this study's findings to other autistic students may be limited but may be valuable for some physical education programming.

Jane or the "unit of analysis" participated in a special physical education class from 8:40 to 10:00 each morning in the school in which she was enrolled. Data were collected during the physical education class by the researcher. Activity modifications were made during the ongoing lesson. Data were broken down into categories of sport. The researcher examined the refinement of sport skill strategies within each sport. Activities which were effective/noneffective were considered; movement profile, body habits, interaction with other students, as well as performance within the physical education class were described.

I decided to work with only one high-functioning autistic female due to the relationship that exists between us. I developed a positive rapport with the student, in which there exists a mutual respect. From our past experiences together (movement camps and programs), I feel this student has the potential to develop the necessary sports skills to be included in a game environment. However, I do question whether or not her disability interferes with the cognitive parameters of games and sports. In terms of establishing a baseline of performance for the case study, a previous movement profile created through an independent study was considered. The subject's movement characteristics can also be analyzed via alternative criteria. For example, it could be described that the student began the research project in the cognitive stage of learning. It is within this stage that the student makes an attempt at understanding the activity to be learned. The student has to convert verbal or visual directions that have been provided into movement behaviors. The cognitive stage is the first step along the continuum of learning. In addition, the student has moved along two stages in the area of skill acquisition. These two movement stages include the basic movement and complex movement skills. The basic skills involve gross motor activities which require large muscle control, such as the arms, legs, trunk, shoulders, and back. Complex movement

skills utilize the fingers, hands, wrists, neck, toes, feet, and ankles. Moreover, in the area of motor development, it can be said that the student was at the skill learning stage when the study began. The skill learning stage allows the participant to learn the basic structure of a skill. I feel that the movement profile describing the subject's habit of body and the assessment of her skills in the areas of stages of learning, skill acquisition, and stages of learning provided an accurate baseline of her abilities prior to commencing the study. Utilizing a previous movement profile, assessing her movement characteristics during the ongoing study, and then comparing movement habits provided a source of credibility for the study.

The subject's family was in full support of the research work. The family also included some of the social stories within the home environment. The family hoped that their child would be capable of integrating into a regular sports environment and have some of the experiences that other girls have.

The "What" Of Data Collection

It is my goal with the aid of a journal to describe what progress the autistic student made in terms of skill development through the physical education programming. I also provided a movement profile which describes Jane's habits of body. The movement profile is compared to a previous profile of Jane, to determine if any changes occurred. Moreover, a journal allowed me to describe the strategies and framework that were used to aid in achieving the desired effects. These strategies included the activities which were effective or ineffective within the programming. Last, a comparison and evaluation of the curriculum guidelines provided by the government (within the physical education environment) and the curriculum/guidelines used within the research project are included. The data collected for this study were collected from two principal datasources (fieldnotes and vidoetape) and transformed into two potentially useful

teaching tools-movement profile and teaching strategies.

The journal is a learning tool which I have used throughout my undergraduate and graduate work. The journal allows the writer to record what has happened during his/her classroom experience. Most individuals usually are asked to reflect upon the experience, and record what, if any, insights they have gained. In my case, I described what occurred during our sessions together in terms of movement and skill progression, as well as the teaching process. Personal insights and feelings about our work together were included. Videotape footage of Jane from the past 3 years was also consulted for confirmation of observation-based insights.

The movement profile is a tool which I was introduced to as an undergraduate student in the Physical Education program at Brock University. I utilized the movement profiles within the special population classes of PHED 3P04 and PHED 3P92. The movement profiles are an extremely useful assessment tool which describe the movement habits and repertoire of individuals. The movement profile is derived from Laban's principles of movement education, which form the foundation for Brock's physical education program. Therefore, I have had several years of exposure to the principles prior to incorporating them into movement profiles. Brock University's physical education program is the only educational program which utilizes movement profiles to describe movement/body habits. Thus, Brock University is a pioneer in developing this tool to assess movement skill. In addition, I have had the opportunity to work through movement profiles when I completed an independent study in my graduate work, as well as during the Brock University Summer Sport School. Therefore, I feel I have the knowledge, experience, and available references in order to complete a thorough and individualized movement profile of Jane.

The Laban movement profile is based on four main themes of movement: body

awareness, space awareness, effort/quality awareness, and relationships awareness.

Within each theme exist multiple subthemes which describe and further subdivide each movement principle (the literature review provides a description of what the Laban Principles entail). In order to describe the movement characteristics of an individual, the researcher must observe the participant within the movement setting for a prolonged period of time. The observer must have a keen eye to observe the child and be able to accurately describe body habits using the subthemes outlined by the Laban principles. Dominant movement patterns and habits must be seen over a prolonged time prior to an assessment being made (see movement grids in Appendix).

Rudolph Laban invented a notation system which could be used to record human movements. Laban's original movement analysis work had concentrated on the structural aspects of motion: which part of the body is in motion, where it moves in the space around the body and how long it takes to reach its destination (Moore, 1982). Laban analyzed and notated the rhythms of an individual's movement into a movement profile. Laban believed that movement represents things, ideas and actions directly. The perceptual elements of motion, its force, direction, duration, rhythm, the appearance and bodily sensation of the action make up its meaning (Moore).

In the movement profile, what interests us is not what is mechanically measurable but rather what is perceived by the naked but informed eye. It is the quality of movement, not the quantity, which captures the attention of the movement profiler. When a profile is made, the observer during his observation period attempts to discover those movement patterns which reveal the unique action motivation of the mover (Moore, 1982). To describe the sculpture of movement one needs to be able to map these disappearing shapes. The mapping process can be facilitated by visualizing the space around the mover's body as a huge sphere- this allows description within a

multi-dimensional context (i.e., planes, directions, extensions away from the body).

The movement profile allows descriptive language to break experiences down into comprehensible parts which have names and commonly used definitions (Moore, 1982). Those naming of these parts of movement can be arranged in an individualized kind of order to communicate body habits to others. Movement phrases makes it possible to draw logical relationships between these cause and effect sequences. Verbal language forces the speaker or writer to break experiences down into parts and then to structure the parts sequentially. This makes it possible to communicate the experience in an orderly fashion, detail by detail. Further, the language is body friendly and transferable across contexts, thus making the descriptive movement profile a versatile evaluative tool.

Data Collection and Analysis

The plan for collecting the data was through the observation period when I was working with Jane. Observation allows the researcher to see an activity, event, or situation firsthand, and to use his or her knowledge and expertise in interpreting what is observed (Merriam, 1988). The observation period was the physical education class in which Jane was participating. Fieldnotes were taken during and following each class, allowing important moments during the class to be recorded without memory loss. The data collected through the fieldnotes and journal were examined using content analysis.

Content analysis is a process of sifting through the raw data/fieldnotes to find observable patterns or divisions. Having developed these patterns I looked for commonalities and differences across patterns. Content analysis in the journal provided the material necessary for the movement profile, list of teaching strategies, as well as information pertaining to curriculum goals.

As the researcher, I attempted to observe and take fieldnotes in my journal on those characteristics which I feel were relevant to this research project and which helped answer the research problem most effectively. More specifically, I observed characteristics such as:

Setting: Is the setting conducive to developing sport skills? Is the setting conducive to promoting interaction among the students and social skills?;

Participants: Describe the participants: numbers, age, condition, educational level.

Activities: What is going on at the beginning and end of class? Are skills taught and refined? Does the lesson have progression?

Instructor: Subtle factors, such as communication, dress, usage of space and so on.

Additional variables (i.e., those which were unanticipated but present in an ongoing way) were also recorded and assessed. Most importantly, I focused my observations on Jane's development of sport skill strategies. A movement profile emerged from the observation period describing Jane's various body habits. The movement profile was compared to a previous comprehensive and cumulative movement profile to determine if progress had been made and to evaluate any changes in habits of body. The case study description was the major source of information. Teaching frameworks/strategies and processes used during our work together were also recorded. Most enjoyable for me, the journal allowed me to comment on the experience and provided any insight that I gained from our work together.

The accurate and thorough descriptions of the questions and variables involved in the study provided a level of credibility and validity for the study. The descriptions were maintained through thorough notes and a journal or log that recorded each design

decision and the rationale behind it. An accurate and thorough journal allows other researchers to inspect procedures, protocols, and decisions. Data within a journal are easily accessible if the findings are challenged and if another researcher wants to reanalyze the data.

Further, the study's generality was enhanced by incorporating a third source of data to provide information on the study. The third source of data which was utilized was the student's special education worker. The special education worker has been working with Jane for a number of years and maintains a close relationship with her. Lynn provided descriptions of Jane's level of improvement/nonimprovement in the sport of basketball. Lynn provided specific information pertaining to basketball and motor skills such as passing, dribbling, shooting, methods of locomotion and so on. Specific information took the form of comments, quotes, or observations. When I noticed an improvement in a specific area of skill, I would ask Lynn to reaffirm my observation, during and following the class. Discussions took place following the class to evaluate progress or regression in the sport of basketball. Data from different sources can be used to corroborate, elaborate, or illuminate the research in question. Designing a study in which multiple cases, multiple informants, or more than one data-gathering method are used can greatly strengthen the study's usefulness for other settings.

Within this study, I acted as the participant/observer. From this perspective, the researcher's observer activities are known to the group and are "more or less publicly sponsored by (the) people in the situation (being) studied" (Junker, 1960, from Merriam, 1988, p.37). The researcher's participation in the group is definitely secondary to his or her role of information gatherer (Merriam, 1988). Using this method, the amount of information revealed is determined by the group members being investigated. In some instances, the researcher will begin as a participant during the class, then gradually

detach himself from the activity, acting only as an observer. This occurred when Jane was independently participating in the lesson plan designed by the instructor. Further, the researcher also acted as a facilitator of information. The researcher attempted to share his knowledge and expertise in the physical education environment. As well, the researcher helped to alleviate comprehension problems during classroom time.

It should be kept in mind that the study's confirmability can be questioned, due to the inability to ask whether the findings of this study can be confirmed by another study. No other studies have studied game/sport structures strategies for a high-functioning autistic individual; therefore no reference exists.

The initial environment in which I conducted the research project was a special physical education class, consisting of four low-functioning students and eight high-functioning students (10 boys, 2 girls). The school's instructor determined the activities and sport skill which were worked on during class time. I was an observer for some parts, but I also completed some individual work in the chosen sport area. The class had a set routine prior to engaging within the actual sport lesson: basketball warm-up, stretching, running warm up, attendance, sport skill development, and formal game. Approximately 10-15 minutes were consumed before the actual sport lesson began.

Due to some personal problems between the parents and the school, the student was removed from the initial site of data collection. Thus, the ability to collect data in that environment was terminated. Finding different environments to complete the data collection procedure were considered and experimented with. For instance, the Brock University gymnasiums and local recreation centers were considered. Following a brief period of experimentation, the student and the researcher participated in a special education movement class organized through Brock University and Notre Dame Secondary school in Welland. The facility used was the Father Fogarty Adult Learning

Center. The program took place each Tuesday and Thursday from 12:30 to 2:00. The first half hour of the class involved some basic locomotor, stretching, and movement activities. The remainder of the class was left for unstructured activity. It was during the last hour that we completed our ongoing work together. In some cases, Jane and I stayed following the class or arrived prior to the class for quiet work together. I attempted to compare Jane's work ethic, attitude, and responses in two dissimilar environments (quiet versus stimulated, noisy environment). Furthermore, Jane's social worker participated in some of the classes and aided in giving instruction.

It should also be noted that Jane was admitted to a residential learning center during the ongoing research project. The admission occurred following the fourth month of research. The center was located out of town, which required Jane to remain there Monday through Friday. Data were collected on weekends when Jane came home. In addition, data were collected by an Occupational Therapy student completing her placement. This fourth source of data gives further credibility to the study.

Assumptions and Limitations

As an instructor and volunteer, I have worked alongside Jane in a mainstream sports camp environment, educational movement program, and a specialized camp environment (Autism Camp). Sport skills in some areas are limited; however, Jane can be fairly proficient if she desires. Jane and I maintain an established relationship in which both parties listen to recommendations and accept instructions from one another. A list of limitations and assumptions is provided.

1) Effect of relationship (rapport) between researcher and Jane. Does there exist benefits or disadvantages to instruction and learning as a result of an established relationship?

2) Jane's representativeness of other high-functioning autistic females.

- 3) Transferral of the teaching strategies and framework used by the instructor (researcher) to other subject areas?
- 4) Researcher time working with Jane. Are the training sessions too short?
- 5) Modifications to designed lesson plan may be too excessive. Are the modifications appropriate for the goals of the study?
- 6) Variable of family/recreation time spent away from the researcher related to the acquisition of sport skills.
- 7) Reinforcement of study from family environment.
- 8) Consistency when working together between the researcher and Jane?(note the subject's stay at the Canadian Parent Research Institute, CPRI)
 - i) Ensuring that the researcher does not exaggerate the work together, avoid bias.
 - j) Researcher has little training in observation & fieldwork, has to rely on own instincts throughout research effort.
 - k) The researcher cannot control classroom environment and the influence of other students on subject. Therefore, classmates may have an impact on learning acquisition.

CHAPTER FOUR: FINDINGS AND INTERPRETATIONS

Comparison of Pre- and Poststudy Movement Profiles

Jane's previous movement profile, developed 2 years previous (1996), can be found in appendix A. Jane's new movement profile can be referenced in appendix B.

Body Awareness

1. Basic body functions

Jane improved movement in three out of four areas in this category. Her abilities to stretch, curl, and twist were improved. Jane displayed an improved ability to stretch when catching the ball at a high level or when shooting from a greater distance than she is used to. Curling was improved through her practice of maintaining possession of the ball. Jane realized that by using her body in a curled possession she can maintain possession of the ball in a safe location. Jane's ability to twist was refined through activities which had her pivoting with and without the basketball.

2. Body Parts Leading, Meeting, and Parting

Body parts leading an action was improved and refined through activities such as dribbling and passing. For example, Jane became comfortable allowing her hands to lead the dribbling and passing activities. The area of body parts meeting and parting was also an area which was improved. This improvement was visible through her locomotion drills, such as shuffling and feet meeting and parting.

3. Body Actions

Jane's ability to travel throughout the gymnasium was an area of significant improvement. Jane was capable of moving through various drills using different methods of locomotion. For example, Jane, who in the past would refuse to travel backwards, became comfortable moving in a backwards or sideways direction. Jane further developed an ability to change direction and speeds using various methods of

travel. However, Jane's ability to elevate or jump did not display much improvement. Jane's inability to get her feet off the ground was consistent through the entire project. She would demonstrate moments of hope when instructed to jump, but during following lessons, she would display little effort to get her feet off the floor.

4. Body Shapes

The ability to produce body shapes on command and through basketball activities were body awareness areas that also improved. For example, Jane became more comfortable using the pin shape when receiving high passes or when shooting at high targets. Learning defending techniques also forced her to stretch her body into pin shape or maneuver her body into a wall shape. The screw shape was improved due to her exposure to pivoting and through moving the ball away from the defender in a stationary position.

Space Awareness

Personal Space

Jane has illustrated significant improvement in her awareness of personal space. Jane had become capable of sending and receiving passes at various areas around the body such as at high, low, medium, and at diagonal areas. Jane has also developed an awareness of personal space in relation to maintaining possession of the ball. In other words, Jane has realized that in order to maintain possession of the ball, she has to keep the ball close to her body. Dribbling at various levels and at distances away from the body has improved her sense of personal space.

General Space

When comparing Jane's movement habits to the previous movement profile, it is apparent that Jane has made her greatest improvements in the area of general space movement. Jane has improved the quality and frequency of movement in the areas of

levels, pathways, extensions, and directions. Due to Jane's increased exposure to incorporating these skills into moving, she has become a more effective mover. For instance, Jane has become more proficient at shooting from high levels and at dribbling at low levels. Performing drills at high and low levels presented difficulty and dislike for Jane. These are two activities which required lots of instruction and much repetition in order for Jane to become comfortable and successful. Jane has demonstrated that she does have the ability to perform activities at various levels when given proper instruction and exposure to the concepts. In addition, as mentioned in the body awareness section, Jane's ability to move in various pathways using different methods of locomotion in any chosen direction (forward, backward, and sideways) is much improved. For instance, Jane can choose to walk, run, side-step, or travel backwards when performing a dribbling activity. On the other hand, Jane's general space extensions displayed some improvement; however, only the large extensions, such as stretching for a pass or completing a pass; need to be refined.

Space Words

Movement within certain space word concepts was also improved. Concepts such as moving around defenders, as well as moving towards and away from someone, were areas with which Jane became more comfortable. Further, Jane demonstrated an improved ability to penetrate space effectively with and without the ball. Overall, Jane became more comfortable using her basketball skills in various areas around the gymnasium and her body.

Effort

1. Qualities

Jane enhanced her ability to dribble, pass, and shoot the ball using different amounts of tension on the ball; however she required instructions to determine how much

pressure she was to put into the skill. Jane could not understand when to use fine/firm or heavy passes. This area of improvement was significant compared to her movements in the previous movement profile. Jane also improved her ability to use various speeds when performing basketball skills such as dribbling and passing (fast and slow). In the previous movement profile Jane was comfortable moving only in a forward direction; however, with exposure Jane became comfortable moving in a variety of directions, including backwards. Movements were mostly free, but Jane developed an awareness of bound movements or when to stop performing a skill such as dribbling when instruction was provided.

4. Basic Effort Actions

a) thrust - sudden/firm/direct; b) slash - sudden/firm/flexible; c) flick - sudden/fine/flexible; d) dab - sudden/fine/direct; e) press - sustained/firm/direct; f) wring - sustained/firm/direct; g) float - sustained/fine/flexible; h) glide - sustained/fine/direct

The basic effort actions were completed more frequently, however the refinement of the skills was not evident.

Relationships

With Objects

Jane's manipulation skills with objects improved significantly compared to the previous movement profile. Jane's fine motor improvement was demonstrated through her refined dribbling and passing skills. The gross motor skills involved in sending/receiving and retaining were further areas that were refined. Jane learned to incorporate large muscle groups into the movement when it was necessary, such as when performing a long shot or pass. In the area of nonmanipulative skills, Jane also demonstrated an ability to be an effective mover around obstacles, extensions, or apparatus. She was also a skilled player when attempting to hit targets.

Jane worked best within a quiet environment; however she did enjoy the company of others. Jane enjoyed the opportunity for interaction, but required a quiet environment for effective skill learning. Partner work is an effective learning tool, but Jane needs to understand appropriate group behavior. With maturity and growth, it seems that Jane is becoming more comfortable in a group setting that is welcoming and nonthreatening. Relationship concepts such as match, lead/follow, take turns, action/reaction, travel with, unison, passing, and send and receive were areas improved and completed successfully compared to the previous movement profile.

Even though I believe the movement profile is an excellent tool to assess and evaluate movement, there is one change which I would have made at the beginning of the study. A change would have appeared in the creation of her movement profile. Within the movement profile a legend was created to describe her frequency and quality of movements in the areas of movement (body, space, effort, relationships). Simple descriptors (ie., fair, poor, dominant, sometimes) were given to each movement category when assessing the subject. Reflecting on the study, I would have created a rubric within each theme of movement and provided a thorough description of the quality and frequency of her movement. The descriptors would have been eliminated and replaced with a well rounded rubric. The rubric would have provided a clear level of expectations for individuals not familiar with a movement profile and the process of evaluating of movement.

Level of Skill Acquisition and Teaching Strategies

Most research suggests that the motor abilities of autistic individuals are poor, immature, or uncoordinated. For instance, Manjiviona and Prior (1995) feel that the movement patterns of autistic individuals are immature and are at a much lower level than their same-age peers. Autistic individuals even score below comparable samples of

nondisabled and retarded peers on most motor performances and physical fitness (Reid, Collier, & Morin, 1983). Therefore, it is apparent that autistic individuals lack the motor abilities to be included within a game environment, let alone basic individual motor skills. However, through this study I feel that I have demonstrated that some high-functioning autistic individuals do have the potential to develop the necessary motor skills for a game environment. Even though this study only included the sport of basketball, I feel that with proper instruction and a positive, structured environment, motor or sport skills can reach a relatively high level of performance in a variety of sports.

The intensity of our schedule together was not overwhelming. Jane and I met two to three times a week working on the basic fundamental skills of basketball. The days in which we worked together could have varied during any week, depending on scheduling and availability of space. Jane and I worked together usually on Tuesdays, Thursdays, or Saturdays. It has been reported that the intermittent spacing of practice, such as random practice schedules, leads to better retention than repetitive practice of the same skill (French, et al, 1991). Routines were kept as consistent as possible, changing only if Jane desired a change of tempo or when anxiety developed. Prior to each research session, Jane was informed of which activities were being performed, and prepared if any changes were necessary. The sequence of tasks usually followed this order: locomotion activities, passing, dribbling, shooting, and combination of skill activities.

As the instructor, I began lessons with activities with which she achieved a high level of success. Having her develop a level of success with beginning drills helped motivate and maintain her attention. The importance of developing positive self-efficacy is supported by Buck, Harrison and Bryce (1990). The researchers feel that early failure in the learning process can lead to lower self-efficacy, while manipulating tasks to

increase success may increase self-efficacy. As a result of possessing poor self-concepts, low efficacy students may exhibit decreased persistence in learning tasks and have shorter time-on-task behaviors. Students will stop trying because they doubt they can perform the skills required or because the environment does not reward their attempts. I believe it was an important component of the lesson to begin with a feeling of success, which increased her confidence and energy level. I tried to maximize our work together when Jane was feeding off her accomplishments.

Skill teaching and development were carried out in a progression from least difficult to most difficult, breaking components down into their simplest parts. For example, in terms of dribbling activities, activities progressed from touching the ball to stationary dribbling, to walking in a straight line, to a slow jog in a straight line, to changing directions, moving around obstacles, and finally dribbling with a defender present. Blakemore, Hilton, Harrison, Pellett and Gresh (1992) support teaching in the progression model. These researchers feel that skills should be taught in a hierarchical order from simple to more complex, and students should clearly demonstrate the ability to master the easier skills before attempting more advanced skills. Rink (1985) also felt that beginning levels of skill needed to be mastered before more complex versions were presented. Naylor & Briggs (1963, in French et al., 1991) suggest that tasks high in complexity and low in organization would be practiced best in parts. Within this research project, tasks were broken down into their simplest forms while trying to maintain interest for the student. Therefore, some of the teaching strategies used by the instructor are considered to be effective teaching methods by research. The teaching style of the instructor-researcher incorporated demonstration work into all of the lessons. Demonstrations provided concrete examples for Jane to reference. In some instances Jane and I walked through activities together.

The study carried on for 7 months, time taken off at Christmas and during her brief admittance to CPRI (Canadian Parent Research Institute). In terms of skill development, I feel that Jane's basketball skills improved immensely over the study's duration (comparison of movement profiles). For example, dribbling with only her dominant hand transformed into dribbling with either her dominant or nondominant hand, emphasizing the fingertips when dribbling. This type of improvement was visible across all areas of skill development (passing, dribbling, shooting, and combining of skills). Improvements in passing were visible with her ability to utilize different passes (bounce, chest, overhead) in different basketball contexts. Shooting improvements were visible in the distance from which Jane was capable of shooting, as well as the accuracy of her shots. Jane was beginning to incorporate all parts of her body, upper and lower, when performing the basketball skills. It should be noted that refined skills were not demonstrated during each lesson. Rather, it seemed that all variables had to be just right for optimal performance. These variables included environment, mood, previous night's sleep, lunch, and treatment by parents and others. Therefore, many variables have an impact on her performance level. Even though it may have taken several more months compared to able-bodied students for Jane to develop and refine these skills, she did achieve what we set out to achieve. In terms of blending some of these skills, it may require several additional months to accomplish that goal.

If research suggests that the motor abilities of autistic individuals are poor, then what made the difference in Jane's improvement? Could it have been the teaching abilities of the researcher, the true abilities of the autistic student, or just the fact that she had the opportunity to practise and refine in a nonthreatening environment? One piece of research tells us that high-functioning autistic persons' catching skills can be good, due to repeated exposure and opportunity (Morin & Reid, 1985). In other words, practice

and exposure are two key variables in skill acquisition for the high-functioning autistic student. In the case of this study, that is exactly what I feel made the difference; she had an opportunity to practise, practise, and practise. As the project unfolded, Jane was capable of developing muscle memory. The performance of the skill was not always perfect; however, the movement patterns of the skills were apparent and steadily improving. Without the opportunity to practise and refine skills, very few individuals, able-bodied or physically challenged, can improve their ability to perform a skill. This study gives support to the notion of inclusion for special needs students.

Jane was capable of developing game skills appropriate enough, I believe, for her age group. As a prospective teacher, I feel there is no reason why Jane should not be included in a regular physical education class. The added ingredient of being part of a classroom may provide the necessary motivation for Jane to reach higher levels of skill performance. Jane demonstrated an ability to develop and refine her sport skills comparable to mainstream students (over a longer period). Further, Jane was also capable of listening to instruction and understanding what instruction entailed. When interested, Jane demonstrated an impressive ability to learn physically and cognitively. However, Jane does require some work in developing appropriate social skills in a group setting.

I believe my teaching abilities played a role in skill acquisition. I am a graduate of a physical education program in which instruction and planning are emphasized. The Brock physical education program emphasizes the importance of proper lesson structure and design in which task breakdown and progression are important components. In addition, I have an abundance of experience in the basketball setting (coaching and active participant) and working with special populations. My background in the areas of programming, special populations, and basketball were positive contributions to the

study. Research provides support for experience in the area of study. For example, Griffey and Housner (1991, in Stroot & Oslin, 1993) investigated planning strategies and reported that experienced teachers were better able to plan and provide learning experiences for children than inexperienced teachers. Experienced teachers demonstrated more complex knowledge structures than did preservice teachers. Perhaps my experience within the teaching environment played an important role in providing effective teaching methods. I was prepared with lesson plans and ideas prior to each class, but I was also able to adapt lessons quickly and accommodate Jane's needs.

Moreover, what may determine the difference between a student becoming an effective learner and one who is not, may be the amount and type of feedback provided by the instructor. Providing consistent feedback to Jane was one method of instruction. Feedback was given during and following each activity. I kept feedback simple and direct to ensure that Jane was not overwhelmed with information. Stewart (1989, in Stroot & Oslin, 1993) feels that the ability to provide appropriate feedback is a significant variable for skill acquisition. However, in order to provide appropriate feedback the instructor must be able to accurately interpret motor performance. Stroot and Oslin feel that, when feedback is appropriate, children are able to respond and improve performance. Through my undergraduate knowledge and experience in sport settings, I feel that I can accurately assess motor performance and program for it accordingly.

Feedback and instruction were usually provided verbally or through a direct hands-on approach. Feedback was as concrete as possible through visual demonstrations and a slow walk-through. Feedback and instructions were always consistent, sometimes repeated, but not overemphasized. Voice tone remained at a low and constant level. Instructions were provided within eye contact, usually close to Jane. In some instances, I

walked Jane through some tasks. Tasks were broken down to their simplest form and carried on from their basic stages. For example, performing a chest pass was completed seated in chairs to stress the extension of the upper body, prior to incorporating the lower part of the body into the skill. Dribbling and shooting activities were broken down into similar form, from very simple to reasonably complex. The teaching strategy of providing tactile feedback is supported by literature. For example, Prior and Chen (1975) found the performance of autistic subjects superior to that of nonautistic controls when tactile feedback was provided. Prior and Chen further suggest moving subjects through a desired motion as an effective teaching strategy. In addition, Rikard (1991) concluded that when provided with feedback, low skilled students showed more change in performance than high skilled students. Rikard (1992) also suggested that low-skilled students should receive corrective feedback, where a focus should be on process rather than product. I did not overemphasize the outcome of the skill; rather, the process in which Jane arrived at the final product was the focus of the study. The focus of process is visible through the use of the movement profiles which concerns itself with the components of movement and how the movement is performed. Thus, the process or quality of movement is given appropriate attention by the goals of the study and the movement profile. Moreover, the undergraduate physical education program at Brock is geared towards preparing students for professions in teaching. Thus, I have had excellent experience in terms of games programming in the areas of task breakdown, task progressions, variation of tasks, quality of performance, evaluation and so forth.

An Example of a Normal Day Lesson Plan

Warm-up:

The focus of the warm-up would include activities which required Jane to travel

in various directions using various speeds. The warm-up attempted to have Jane become comfortable in the setting and prepare the body for physical activity.

ACTIVITIES:

1. Jane would be asked to walk anywhere in the gymnasium. Jane usually traveled in straight pathways. This required me to instruct Jane to travel in various directions. Once Jane began to feel comfortable moving around the gymnasium, a change of speed was instructed. Much encouragement and reinforcement were necessary to have Jane move at a faster pace.

2. The second activity had Jane travel backwards. Jane was not comfortable moving in a direction which she could not see. With time and encouragement Jane reached a level of comfort moving backwards. A change of speed and direction was also asked of Jane when moving backwards.

3. Shuffling across the gymnasium floor was the third activity instructed for Jane. Shuffling drills consisted of Jane moving in various directions and speeds around the gymnasium.

4. In some instances, I would have Jane jump over obstacles such as pylons or travel around the pylons which were set in various formations. Structuring the environment provided visual cues which assisted Jane in understanding where to move.

SKILL DEVELOPMENT: Prior to any skills teaching, I provided a thorough demonstration. Verbal and tactile feedback was provided following each activity.

PASSING: Passing drills were usually the first activity during skill development.

CHEST PASS:

1. Perform the chest pass against a wall without a partner. (send & receive)
2. Perform the chest pass with a partner at a close distance (5 feet). Gradually make the distance greater.

3. Perform a chest pass against a wall with a partner receiving the pass. Remind Jane to aim for partner.

4. Perform a chest pass aiming for targets at various levels against the wall.

5. Pass with partner while seated. This will emphasize the upper part of the body when sending the ball. Increase distance between chairs as accuracy increases.

6. Perform a chest pass with a partner while moving in various directions and speeds through the gymnasium. Prompts or targets (i.e., pylons, chairs, tape) were used to ensure that Jane moved to correct locations.

7. If a third person is present, play games such as "monkey in the middle" so that ball possession is reinforced.

BOUNCE PASS & OVERHEAD PASS:

Complete activities 1-7 using the bounce pass and the overhead pass.

DRIBBLING ACTIVITIES:

1. Jane was encouraged to touch the ball with her fingertips prior to bouncing the ball. I felt that by allowing her to touch the ball with her fingertips, Jane would get a "feel" for the ball. I also attempted to reinforce dribbling with Jane's fingertips by touching her fingertips with my hands and then with the ball. Providing tactile stimulation reinforced the correct dribbling technique and which body parts to stress when performing the skill.

2. In a stationary position dribble with the dominant hand.

3. Switch to the nondominant hand while remaining in a stationary position.

4. Alternate hands when dribbling; right to left, left to right.

5. Seated in a chair, repeat activities 2 through 4.

6. Once a level of comfort had been achieved with the dribble, Jane began moving in a forward direction. Jane was instructed to change directions and speeds when

dribbling.

7. Obstacles were provided for Jane to manipulate around and through.

Obstacles included pylons, hula-hoops, and chairs.

8. Jane was instructed to dribble at various levels in a stationary position.

Changing levels was a difficult and uncomfortable task for Jane to complete.

9. Complete drills which had Jane protect possession of the ball with her free hand.

SHOOTING:

1. Shoot against wall individually using overhead technique.

2. Provide targets (hoops, letters, pictures) for Jane to shoot at against the wall from a close distance.

3. Vary distances when shooting.

4. Practise shooting techniques with a partner back and forth.

5. Begin practice shooting at a basketball net. Change distances from which to shoot at the net. Place cues (tape, hoops) on the floor from which Jane can decide to shoot.

COMBINING SKILLS:

The skills of passing, dribbling, and shooting were combined into various drills to best simulate a basketball experience. Drills such as receiving a pass, dribbling through various obstacles, and then completing a set shoot would be attempted. Various combinations of these skills would be combined.

ACTIVITIES WHICH WORKED BEST:

1. In order to change speeds when traveling, tag games or follow-the-leader were effective activities which she enjoyed.

2. Jane enjoyed shooting activities; when she was successful in making a basket

she was proud of herself. Pride was expressed through high-fives and unique happy faces.

3. Jane enjoyed drills while seated in the chair. She was not an overly eager person to move while completing drills; thus stationary activities were comfortable activities for her. Stationary drills were effective lead-ups for more complex drills.

4. Target games were also enjoyable for Jane during shooting or passing drills.

5. Jane enjoyed activities in which she performed an activity with partners, such as in passing and shooting drills. Jane seemed to be motivated and worked best when there was more than one person involved in the activity.

ACTIVITIES WHICH WORKED POORLY:

1. Activities which required Jane to be more physical, such as changing speeds, directions, and levels were not effective activities or Jane's favorites. Much encouragement and impetus were needed for Jane to complete activities which required physical movement.

2. Dribbling activities which required the use of her fine motor skills were challenging for Jane. These activities were even more difficult when Jane was asked to dribble with her nondominant hand. The dribbling activities required her to put forth high amounts of attention and effort.

3. Drills which required Jane to put two skills together were difficult tasks for Jane to accomplish. For example, basic drills such as running and completing or receiving a pass were initially difficult to learn. As her exposure and practice time increased, she would become more comfortable with drills that required the combination of two skills.

What Regular Curriculum Says

When examining the physical education curriculum (1988) from the Haldimand

Norfolk board, it would be fair to suggest that their assessment tools are inadequate and poorly structured. The assessment tasks within the basketball unit are geared towards testing the outcomes of their skills or the quantity of the skill. For example, when testing jump shots, assessment is based on how many baskets a student can make. Or when testing passing, assessment is based on the number of accurate passes an individual can make to a spot. In terms of an assessment tool for students with disabilities, this method of evaluation is inadequate. Should an instructor really care about whether an autistic student can accurately pass a ball against a target or shoot a ball in a hoop? Rather, I feel that testing should be concerned about quality of performance or how the student got to a particular achievement. Basing an autistic student's grade on the number of baskets or accurate passes he or she can make is an inadequate method of assessment. In some cases, the autistic or other special needs student would not realize that they are being tested or what is at stake during the test.

In addition, variables outside the classroom are not taken into consideration in the assessment process. In reality, how many autistic students have the opportunity outside the classroom to participate in recreational or community sports compared to their able-bodied counterparts? The answer is very few. Their able-bodied peers have a greater opportunity to practice and refine their skills. The amount of exposure students have to participation in sports has a significant impact on how refined their motor or sport skills become. Thus, I feel it would be unfair to consider Jane's level of skill through curriculum assessment tools without consideration of outside exposure to any activity. Moreover, if integration is a sincere and legitimate concern for government, school boards, and teachers, perhaps assessment tools should take into consideration the disability and skill level of a student. Accommodations in the area of assessment should be made for the student with disabilities. Perhaps assessment should be individualized

for the students with disabilities to put them on an even level with their nondisabled counterparts. In fact, individualized assessment would benefit all learners, because students do not develop and mature at the same level. It should be remembered that assessments can have a serious impact on children's levels of self-esteem and whether or not they have the opportunity to have social relationships with their classmates.

An alternate method of assessment which can be used by the instructors is the use of a movement profile. The movement profile is not concerned with the frequency of accuracy in performance; rather it is concerned with quality of performance or a description of performance. The movement profile provides a guideline for describing the movement habits/repertoire of a student in the areas of body and space awareness, effort qualities, and relationships. The movement profile can be an especially useful assessment tool for instructors with special populations because it is concerned with the process of a skill more than the product. The profile will demonstrate the areas in which students are proficient, as well as the areas where the students have movement weaknesses. Programming for a person with disabilities or an able-bodied individual can be generated from the movement profile. With proper instruction the student can gain a greater sense of body awareness with the help of the movement profile. An example of a section of a profile is provided following. The movement profile assessment can be accessed within Chapter Four. The pre and post-movement profiles can be referenced in Appendix A and B. The movement concepts can be found in Appendix C.

Example of Section of a Movement Profile:

BODY AWARENESS:

1. Basic functions: bend or curl, stretch , twist.

Jane improved movement in three out of four areas in this category. Her ability to

stretch, curl and twist were improved. Jane displayed an improved ability to stretch when catching the ball at a high level or when shooting from a greater distance than she is used to. Curling was improved through her practice of maintaining possession of the ball. Jane realized that by using her body in a curled possession, she can maintain possession of the ball in a safe location. Jane's ability to twist was refined through activities which had her pivoting with and without the basketball.

When comparing the provincial government's curriculum in physical education and in basketball instruction to this study, common themes exist. For instance, the objectives of programming in the curriculum guideline and those for my study are quite similar. The objectives of improving psychomotor development (i.e., running, passing, shooting), promoting social growth, and understanding some parameters of games were common goals. However, the method of evaluating skill development is somewhat different. The provincial guidelines indicate that assessment should be completed through assignments, checklists, ratings, quizzes, and other product-oriented methods. In the case of this study, I assessed performance using a movement profile. The movement profile allowed me to break down movement performance into four major areas (i.e., body, space, effort, and relationships) and assess the process of performance. It may be unfair of me to suggest that the movement profile is a more accurate assessment of movement performance; however, because the profile allows the assessor (myself) to evaluate performance in such a wide range of areas and to be very descriptive about performance, I will state that for Jane and students like her, it is a better form of evaluation. Moreover, there is no grade to the movement profile, thus reducing competition and potential ridiculing among students.

Examining the new physical education curriculum documents (Ministry of Education and Training, 1998) demonstrates that the government wants to establish an

educational system which is welcoming and prepared to deal with special needs students. The document suggests that teachers should be prepared to accommodate a variety of special needs in the classroom. For example, the Health and Physical Education documents (Ministry of Education and Training) state that within the health and physical education setting “exceptional students may need a variety of modifications both to the program itself and to the learning environment” (p. 6). These modifications can include: program modification (altering the method of instruction), equipment modification, and assessment and evaluation strategy modification that accommodate a variety of learning styles and needs. I feel that the achievement level are an excellent method of evaluation for the nondisabled students; however they do pose some difficulties in evaluation for students with disabilities. Programs will have to be properly modified to allow for accurate evaluations via the assessment rubric.

When examining the new curriculum document’s overall objectives, only the development of basic movement skills is applicable to this study (Ministry of Education and Training, 1998). The other two objectives seem to imply more interpretation rather than learning through doing. In addition, this study can relate to only one strand found in the Health and Physical Education documents: fundamental movement skill. The movement skills are organized into three categories: locomotion/travelling, manipulation, and stability. This study shares the common goals of developing fundamental movement skills and encouraging active participation in a sport (basketball). A level of credibility can be added to this study because the study and the new curriculum share common goals.

I feel there exists one problem with the new curriculum, the expectations of the students in the physical education classroom. The curriculum guideline states

Students in the physical education classroom should

understand that they have responsibilities to their own learning, which increases as they progress through school. Those students willing to make the effort required and able to apply themselves soon learn that there is a direct relationship between achievement and hard work”(p.3).

I am assuming that these expectations are not geared towards students with disabilities because few will make the association between effort and achievement or undertake the responsibility for their own learning.

Teaching Styles

There have been many frameworks that have attempted to describe and organize the processes involved in teaching. The value of different frameworks from which instructors can choose is incalculable. Each child does not learn from the same teaching style, thus instructors should have more than one teaching style to resource. Within this study; the command teaching style was the style preferred and the one used most often. Research suggests that the command teaching style is the most appropriate style for autistic students (Sherrill, 1998). The purpose of the command style is to elicit a response or many responses from one or more persons in a given subject matter (Mosston, 1966). The command style by definition “is the style which focuses on the teacher and the subject matter” (Mosston, 1966, p. 23). The teacher is the one who may make decisions concerning physical activities, as well as the one who determines the social-emotional climate in the class.

The command style of teaching seemed to provide the structure and direction necessary for Jane. Autistic students require structure for optimal learning, and that is exactly what was provided for Jane, an environment which was structured each day with some variations to elicit change and increase comfort. Each day the structure was

relatively the same, with variations added when necessary. A structured environment usually provided Jane with the most useful supports and helped her be successful. Providing a structured environment is a common agreement among educators programming for autism, such as Starr (1998). For example, each class would begin with a warm-up which included moving in various direction, changing speed, and alternating the method of travel. The warm-up would be followed by passing and dribbling drills. This activity routine was transferred to numerous sites where research took place. Research will agree with the suggestion that command teaching style is a positive teaching style. The effects of three teaching styles (command, practice, and reciprocal) were investigated in terms of motor skill acquisition and retention of a selected shooting task by Boyce (1992). The command and practice styles were found to be significantly superior to the reciprocal style in terms of skill acquisition and retention. However, in terms of enhancing social development, a weakness of autistic students, the command teaching style is not the most appropriate. The command style does not provide the necessary opportunities for social interaction for the autistic student. Thus, other teaching styles may be incorporated into the learning environment to stimulate social interaction. Allowing Jane to suggest activities and become part of the decision making process during the class was one alternative teaching method used.

One teaching strategy which was incorporated into this study was goal setting. Goal setting provided objectives for Jane and me to strive for in specific time periods. Verbal goals were discussed and established prior to working with Jane. The goals of the study were explained to Jane by me and her parents. Basketball goals, such as being capable of dribbling with her dominant hand, were explained to Jane via demonstrations, pictures, and social stories. These concrete items are more effective learning tools compared to abstract items or written phrases such as, "Try and dribble like Michael

Jordan". No time limits were placed on reaching any goal. Due to Jane's cooperation and relative interest in the study, it did seem that Jane understood the nature/goals of the study and became a willing participant in the project.

The use of goals should be a common theme in Jane's learning, whether it be physical education, mathematics, or art. Goals provide something tangible and realistic for Jane and other students to strive for. Being autistic did not inhibit Jane from understanding what goals are and what we were trying to accomplish through this study. Thus, as the instructor-researcher I felt that including goals within this study was a positive aspect of the study. Research reports that goal setting is a benefit to the student learning a skill, specifically a sport-related skill. Locke (1967, in Howe & Poole, 1992) predicted that setting realistic but difficult goals would result in higher levels of performance than would setting easy goals, no goals, or do-your-best goals. The research study completed by Howe and Poole (1992) demonstrated that all forms of teacher-assigned goals produced significant improvements in the student's basketball shooting performance. Goals were reported to be effective for both low and high achievers in improving shooting performance from the first week of instruction to the final week of the basketball unit. Short-term and long-term goal conditions resulted in similar improvements in performance. Deciding whether to use long-term or short-term goals with the autistic student should be considered by the instructor. The use of long-term goals for those high-functioning students capable of understanding may not provide enough information or make sense over time. The use of short-term goals may be the most effective use of goals. Short-term goals offer more opportunities to provide feedback that will increase the student's motivation to persist and improve to a higher level of performance. Students will experience achievement with short term goals.

The best learning strategy for teaching Jane sport skills seemed to be through

hands-on experience and visual cues. It would be unfair to suggest that Jane cannot learn through auditory means, but rather that tactile and visual methods are more effective in maintaining Jane's attention. The hands-on approach of the study allowed the learning to become more personal and meaningful for Jane. She was an active participant in explaining activities, as well as modifying some to suit her own interests. The hands on approach to the study helped motivate Jane during the study. Visual cues such as body language (pointing, showing, facial expressions), environment (objects, closeness of a person), and tools to meet specific needs (pylons, hula hoops) were some of the visual cues incorporated in this study. Visual cues, if used properly, can enhance the attention, perception, memory, information processing, and language of the study according to research (Quill, 1977). Within this study, I feel that, through the use of various visual cues such as facial expressions and various objects (i.e., targets), Jane's attention was maintained for longer periods of time.

The use of reinforcers was also an effective strategy used in the learning environment. The types of reinforcement used included positive and reinforcement removal. Positive reinforcement serves to increase behaviors and occurs when a satisfying consequence is presented and results in strengthening the response. The desired behavior was effort, attention, concentration, and an improvement in her basketball skills (relative to her abilities). Reinforcement removal weakens undesirable behaviors, because it involves taking away reinforcers from students who behave inappropriately. The undesirable behavior included poor time on task, minimal effort, lack of interest, and no improvement in her basketball skills. Positive reinforcers included such things as food, extra time on the computer, verbal praise, and the possibility of playing basketball with friends from school, especially the boys. Reinforcement removal included acts such as the removal or the reducing of snacks and

computer time, and removal of extracurricular activities such as going bowling or playing with musical instruments. The use of reinforcers acted as an excellent tool to get Jane motivated and on task. It required several weeks for me to gain an understanding of which reinforcers would or would not affect her the best. Jane's special education worker provided reinforcement suggestions that would work best with her. It was quite evident that both the presence or mention of food and boys would motivate Jane to display relatively high levels of interest and effort.

Other teaching styles can be considered to provide alternatives for the instructor with a variety of students. Goldberger (1983, in Boyce, 1992) reported the results of three studies that investigated the effects of three styles (practice, reciprocal, and inclusion) on the psychomotor performance and social development of fifth-grade children. Results indicated that the practice style produced the highest motor skill attainment and the inclusion style enhanced short-term social development in terms of increased social interaction with peers. In comparison, Goldberger, Gerney, & Chamberlain (1982) found in a study of hockey accuracy task for fifth-grade children that the reciprocal style enhanced social development for those behaviors related to giving and receiving feedback with a peer. Mosston and Ashworth (1986) found that, through reciprocal teaching, giving and receiving feedback with a peer resulted in an expansion of learner socialization skills. Students have the opportunity to learn about the socialization and learning process in physical education.

The Role of Environment During Skill Acquisition

Throughout our experience together, I have learned that environment is one of the most significant factors in determining Jane's behavior, attention, and work ethic. Research suggests that some autistic individuals possess extremely sensitive senses and

have unusual reactions to stimulus. For example, visual stimuli such as bright colors and moving objects seem to stimulate some children with autism quite excessively. In many instances, these stimulations are serious distractions in the classroom, contributing to high levels of anxiety for the autistic student. High levels of anxiety lead into disruptive behavior and ultimately contribute to losing the attention of the student.

My experience with Jane has illustrated that a quiet, peaceful environment with as few distractions as possible provides the optimal working environment. The traditional approaches to teaching are not a suitable learning environment for Jane. For example, the traditional, large physical education classroom which would include many excited students creating an abundance of noise is not the ideal learning environment. The type of distractions found in the traditional learning environment pose obstacles for effective learning. Some of the variables or stimuli found in the classroom, such as yelling, screaming and chaotic running by students, may potentially lead to high levels of anxiety or frustration for Jane. If high levels of anxiety or disruptive behaviors begin, the ability to maintain concentration and work diligently may disappear.

I am not suggesting that integrating the autistic student with other students is impossible or not beneficial; however, I feel that the instructor should consider the goals of the task prior to choosing cooperative or isolated work. When comparing the environments, a quiet environment is definitely the most beneficial environment for this particular learner. Jane was most cooperative and accepting of instruction when there was a limited number of distractions. Within a quiet environment, I was capable of maintaining her attention for longer periods of time, as well as getting a positive work ethic compared to the more stimulating environment. Moreover, I discovered that Jane was not overly distracted by lights, colors, or other related stimuli. Rather, other people within the environment posed the greatest distraction. Jane was easily distracted by other

individuals playing in the area, especially if they were boys. Retrieving her attention after losing it was an overwhelming challenge, sometimes causing frustration for both Jane and me. In some instances, the transition to new environments and to other people caused some behavioral problems for Jane. Uncomfortable or threatening stimuli would cause Jane distress and would potentially change her mood from being friendly to uncooperative and upset.

On the other hand, I also discovered that Jane achieved a high level of enjoyment from working with familiar students in structured group work or unstructured activity. This type of behavior was not observed on a consistent basis, which suggests that other variables play a role in her behavior. However, integrating her with other students was an effective learning method and should not be omitted from her education experience. The benefits of integration for Jane are demonstrated through her friendly and cooperative behavior with other students. I feel that by working with other students Jane becomes more self-confident and is more easily taught. Using other students in some of the tasks completed by Jane was a motivational ploy used. I realized that Jane enjoyed "showing off" her skills to others in a group setting. Thus, I would incorporate other students into the tasks. If problems or confrontations arose within the working environment, having her work with other students or just providing her with free time seemed to calm her down. Escalating the problems would only contribute to higher levels of anxiety. Therefore, I would not push instruction to the point where she would become impossible to deal with.

To summarize, I feel that the best environment for this autistic student to work within is an environment which is quiet and calm, with few people and minimal distractions. Maintaining a consistent environment to work in was not a problem. Jane was comfortable switching environments as needed. As long as the environment

possessed the necessary qualities for a productive workout, Jane had little problem with a change of location. The environment has the potential to play an incredibly important variable for the autistic student one which should not be overlooked by instructors.

The teaching method and choice of location used within this study followed the principles of the least restrictive environment. The instructor insured that lesson plans and activities were matched appropriately with the skill level of the student. The instructor had previously worked with the student and developed a movement profile describing the movement repertoire she possessed. Thus, areas of strength and weakness were known. Plans and activities progressed as the skills were refined. If a task seemed to be too difficult for the student to complete, appropriate adjustments were made to ensure that tasks met her skill level. Separate instruction provided during the study adds support to the least restrictive environment principles or a teaching approach of an "adapted command approach".

In addition, the teaching approach which I used ensured that freedom was preserved for the student. Jane had the opportunity to complete activities in the order that she preferred, as well as the freedom not to complete them at all. Activities were delivered in a setting that offered the greatest chance to succeed. Jane completed activities in an environment (isolated, determined through observation) best suited for her learning style. During some classes or parts of others she had the opportunity to interact with children with and without disabilities. The least restrictive environment seemed to be the most beneficial environment for this student to work within. The least restrictive environment allowed Jane to thrive within the one-to-one interaction between instructor and student.

Rapport and the Learner

I have an established previous relationship with Jane. Jane and I have worked

together for several years and maintained a positive relationship. Through the camps/programs that we have been involved in, Jane and I have shared many positive and negative experiences. Jane and I have shared lunch together, driven together, shared hugs and kisses, wrestled and played games together. I have also had the opportunity to learn what to do and not to do when working with Jane. For example, in order to strike up a conversation with Jane, talk about any Disney movies or characters. Disney movies and characters are a source of enjoyment for Jane. Without having a previous relationship and exposure to the one another, I feel this study would not have taken place. Due to my established rapport with Jane, I was aware of characteristics which may set her off and how to calm her down when necessary. Moreover, Jane was receptive to instruction from me and was aware that I would not put up with any of her "acting out" or behavior fits. Being open to her suggestions and opinions also aided in developing a positive rapport. Lowman (1994) feels that teachers high in the ability to create interpersonal rapport can affect their role as motivators and are viewed as positive and democratic. Further, I was aware of moments of escalation and how to deal with them (for the most part). For example, in order to redirect her attention when anxiety or frustration developed, I attempted to get her active and redirect her. Other alternatives included taking a time out to relax, leaving her alone, or trying to be humorous with her. Trying to get into her frame of mind and understanding what she was thinking was the most successful tactic to lower tension. I feel that due to the rapport established between Jane and me, the environment was a positive and welcoming one to work within. Even though there were moments when confrontations arose, our previous relationship helped ease tensions. According to Keeley et al. (1995) the characteristics of empathy, respect, and genuineness are three qualities describing rapport. I feel that I demonstrated the ability to communicate these characteristics with Jane prior to and during this study.

Without developing these characteristics, our relationship would not have lasted this long.

The positive learning benefits of having a previous relationship with the learner are supported by researchers Byra and Marks (1993). They examined the effects of pairing learners in the reciprocal style by ability (high, low, and mixed) and by companionship (friend and nonacquaintance) on provisions of feedback and perceived comfort while learning motor skills. Results showed that the observers gave specific feedback more frequently to friends than nonacquaintances, and that the doers felt more comfortable receiving feedback from friends than nonacquaintances. Having an established relationship/friendship prior to the beginning of the study was a positive benefit for skill acquisition.

Comparing how Jane reacted and worked with other trained professionals in this study helps illustrate the importance of rapport between teacher and learner. When Jane was admitted to CPRI, the occupational therapist agreed to continue working with Jane in the area of this study. Specifically, an occupational therapist (OT) student completing her placement from Western University continued the study. Even though Jane and the OT student only worked together a few times, their experience can be described as challenging. The OT student mentioned to me over the phone that Jane was not receptive to instruction and displayed little enthusiasm. When I was asked to visit the facility and provide a demonstration of our work together, the OT and the OT student were impressed with the intensity of the session and the effort put forth by Jane. Comments such as "You're good with her", "You guys have good chemistry", "What a high energy level", and "She doesn't do that for me" arose from the OT and the OT student. The comparison of work effort with two different instructors demonstrates the effect of rapport on a learning environment.

The effect of rapport was also demonstrated when Jane's special education worker participated in some of work sessions. Jane and Lynn have an extremely strong relationship together, in which Jane is aware that Lynn also will not put up with any fits or poor behavior. Jane is receptive to instruction from Lynn even more so than she is from me. Jane seemed to work more aggressively/intensely when Lynn participated. Jane will not refuse to do any activity because she is aware that Lynn will somehow find a way to make her do it. Lynn has developed such a strong rapport with Jane that she realizes which tactics or motivational ploys will get her to work best. Things such as boys, food, opportunity to play with her musical instruments are ploys which Lynn realized will encourage Jane to work harder. These sorts of personal items which Lynn had learned through their relationship are excellent teaching tools with Jane. These tools can be used because Lynn is aware of how to use them and due to the strong level of rapport she has developed with Jane.

Autism and Critical Thinking

Through the study, it was demonstrated that Jane's disability had a negative impact on her ability to improve her basketball skills to a level high enough to participate in a formal competitive game. Even though Jane can participate in a leisure basketball environment or physical education class, there exist some barriers related to her disability which may hinder her ability to compete in a formal competitive game setting.

The physical stimuli found in the physical education environment posed little problem for Jane. Jane was rather comfortable with the sounds of whistles, yells, and bells. Jane was also comfortable changing environments in which we worked. Nevertheless, there were several characteristics of the disability which could hinder her participation. For example, Jane's ability to interact socially with a group of students for a prolonged period of time can be questioned. Jane did demonstrate that she could

engage with students (special needs students) and enjoy that interaction. However, the positive interaction was not demonstrated on a consistent basis enough for me to believe that she could integrate successfully in a competitive game. The appropriate group skills necessary for the interaction have not developed. This lack of development is due to the few opportunities Jane has to interact with other students. It should be remembered that the interaction found in the controlled classroom environment cannot compare with the competitive, fast-paced basketball environment Jane could find herself in.

In terms of developing the appropriate basketball vocabulary, Jane has demonstrated comfort in this area and has the ability to learn the matching vocabulary. Yet, Jane's inability to consider other people's feelings/thoughts, and lack of a theory of mind may inhibit her ability to become a part of a basketball team. Without the theory of mind, Jane will not be capable of anticipating what other players are doing, feeling, or thinking. Her inability to think in terms of a basketball context will have a negative effect on her performance and ability to be a team member. Furthermore, Jane's inability to think critically may pose a problem to successful participation. Even though Jane provided suggestions for completing activities, she rarely questioned any activities which I suggested. Assessing problems and finding potential solutions are areas Jane needs to work on, not only within the basketball arena but also in her everyday life. Perhaps Jane needs to experience a sense of success in some activities in order for her to gain confidence to develop questioning ability. I believe that in order to think critically, the mind has to be trained for that purpose. If Jane has the opportunity to be involved in a valuable educational experience which focuses on training the mind, rather than acting as a daycare servicer, she may prove that she can do much more with her intelligence than we presently believe.

When comparing the provincial and the local school boards' curriculum

guidelines to this study, the goals of the study are extremely similar. Improving or observing areas such as motor, cognitive, and social skills were objectives and qualities found in both the guidelines and this study. Further, Jane experienced similar stages of development compared to her normal aged peers in the areas of : stages of learning, stages of motor skills, development of motor skills. There does exist a difference between the evaluation procedures used by government guidelines and the guidelines of this study. A closer examination of evaluation procedures should be considered by educators.

The use of social stories in the study was used at the beginning of the study but it was not carried out throughout the study. In retrospect, I wish I used social stories throughout the entire study to test their long range effects.

CHAPTER FIVE

Conclusion and Recommendations Introduction

The purpose of the study was to determine if a high-functioning autistic female (14 years of age) was capable of developing game structure strategies necessary to participate in a game environment. Realizing that many variables can play an important role in Jane's classroom success, I feel that all relevant variables were accounted for as best as possible. These variables included teaching strategy, environment, motivation, attention, and so on. The study was completed over approximately a 6 month period. The majority of sessions between Jane and me were completed in a quiet, isolated gymnasium. However, in some instances Jane participated in a class with fellow special education students.

The initial intent of the study was to develop game skills in a variety of sports. However, that goal was unrealistic. I was naive to assume that a high-functioning autistic girl can become a skilled performer in a variety of sports. Rather, one sport was more realistic to consider in the study. That sport was basketball. Basketball was a sport Jane enjoyed playing and in which she achieved a level of success. Consistent lessons were completed with Jane two to three times a week. The lessons developed and refined skills such as passing, dribbling, and shooting. Activities which combined these skills were further attempted. Much benefit has arisen from this study for both Jane and me. This learning and teaching experience has aided Jane in improving her game skills, as well as improving her ability to function in a physical education environment. For myself, it has given me the opportunity to study a disability in depth and learn from a hands-on experience. My teaching skills have been greatly tested and improved as a result of this learning experience. Some of the benefits and a basic summary of the study are

discussed in the following section.

Insights and Commentary

First and foremost, I feel that I have demonstrated in this study that this high-functioning autistic individual has the potential to develop the necessary motor skills for a recreational environment or physical education class. Even though most educational research may not agree with this finding, I feel that I have demonstrated that a high-functioning autistic individual can develop and refine (relatively speaking) the basketball skills necessary for a physical education environment. With proper instruction and a positive, structured environment, motor or sport skills can reach a sufficient level of performance in the sport of basketball, and perhaps in other sports. Instruction should focus on one sport and not on a variety of sports if refining is the goal. I feel that there were many factors which played a role in Jane's success in basketball. Some of these factors are discussed.

The teaching strategies and schedule used during this study seemed to work effectively and suit Jane's needs. For example, the intermittent spacing of practice times and lesson structure used were contributors to the study. Lesson plans were not completed each day; rather a variety of scheduling was provided for Jane. Further, beginning lessons with activities in which Jane achieved a high level of success was beneficial. These lessons followed the principle of teaching activities from the least to most difficult, allowing for a high level of success early during lessons. Early success led to improved self-esteem, which in turn led to superior work in the gymnasium. Providing demonstration and hands-on activities were also effective learning strategies. Demonstrations were provided prior to beginning an activity or when giving feedback to correct a movement error. Opportunities to practise were keys to improving sport skills.

In the above paragraph there exist features which can help this autistic student

reach a relatively high level of proficiency in the sport of basketball. In order for the teacher to have the opportunity to utilize all of the suggestions, a method of delivering the system should be in place. For example, the type of environment and teaching style should be considered.

Within the Findings and Interpretations section of the paper it was demonstrated that Jane worked best in an environment which was quiet and with few distractions. It can also be said that Jane enjoys working in groups and has the desire to interact. Through some parts of the study Jane demonstrated an acceptable level of behavior when working in groups. I feel that it was important for Jane to have the opportunity to interact with her same-aged peers in order to have a model or example to develop the appropriate group skills. Without any exposure to everyday examples of interaction she may never develop those skills. Reflecting on the two environments Jane participated in, she thrived within the environment with little stimuli and few distractions. During her stay at a local high school Jane had difficulty becoming comfortable in the physical education class (special needs students). There were interruptions during the class, such as attendance taking, getting out equipment, as well as many transitions Jane had to deal with. The transitions were challenging for Jane to deal with, which led to discomfort and anxiety. In addition, Jane felt alienated as one of only a few girls in the class. Jane's size and personality also presented obstacles for successful interaction. However, within the new environment at Notre Dame Adult Learning Center, Jane enjoyed the one-to-one instruction she received, as well as the occasional participation in the physical education class directed by Brock Physical Education students. Even though integration of special needs students into regular curriculum is a goal for many teachers and school boards, it may not be the most conducive environment for learning. Teachers should consider the goals of the class or unit when deciding to place Jane. The decision of placement should

be left up to both the parents and teachers following observation over a prolonged period of time, and then should be implemented with a worker and/or peer helper support.

The one-to-one instruction provided in the study was enjoyed by Jane and seemed to be the most effective learning environment she experienced. It would be a fair assessment to comment that the majority of students will excel (mentally or physically) when they are given one-to-one instruction. In today's world of restricted budgets and larger classroom sizes, providing one-to-one teacher-student interaction may not be possible for the autistic student for whole, half, or parts of a day. What, then, becomes the quality of life for the autistic student or any other student who requires some one-to-one assistance? How can educators contribute to a meaningful life for these students when we cannot provide the assistance needed? It seems that education becomes a secondary issue to providing a daycare service for these students. The one-to-one instruction reduces the possibility of high anxiety levels with those students who have difficulty interacting in a large classroom. Other teaching options which can be considered include peer tutoring, private tutors, or group collaboration. The instructor must consider the social ramifications of incorporating these strategies into the classroom.

In some cases, various students, including the autistic student, will require more than one place to learn. Due to anxiety being associated with various places for some students, alternate environments will have to be tested. The teacher should try to determine the best learning environment for the student.

In addition, the teaching style has an impact on the delivery system. During the beginning stages of learning, the command style of teaching was primarily used. I would have a lesson plan or ideas scheduled for the day and try to follow them as closely as I could. However, as the study progressed, the command style of teaching transformed

into a cooperative approach between Jane and me. The principles of the command style of teaching were still followed, but completed through a cooperative approach. Jane became a partner in the learning environment, visible through suggestions and ideas she brought forward. Learning became more personal for Jane through the cooperative approach, reflecting in her effort. Jane's improvement was influenced by her own suggestions and effort.

The issue of control during our work together played an insignificant role within the study. Due to our previous established relationship and prolonged engagement over the course of the study, Jane's acceptance of my instructions was positive. I was also quite comfortable listening to suggestions from Jane. Jane's future teachers will have to understand that having complete control over the learning environment may not be the best teaching environment to have Jane involved in. Allow Jane the opportunity to choose some of the activities she wants to complete. If these activities are not appropriate for Jane, introduce alternatives and try to facilitate Jane to pick the activities which are most beneficial. Provide Jane with at least the opportunity to have some control over the learning environment.

Without the previous relationship that had existed between Jane and me, this study would not have taken place. Jane's parents and special education worker should also be credited for making this project a success. I have known and worked alongside Jane for approximately 4 years within movement settings. Thus, Jane was comfortable working alongside me in a movement setting, and I was comfortable working with her. There had always seemed to be a sense of trust and fondness for one another since we were introduced. This sense of trust and genuine friendship allows us to carry on a positive friendship to this date. I have grown to care for this person deeply, which is not an easy thing for me to say. Jane is aware of how I feel for her, and I believe she shares

the same feelings for me. Without that sense of trust between teacher and student, the motivation for learning will not occur. Regardless of the teaching strategies, methods, or styles that I would try to incorporate into my lessons, without that sense of trust, Jane would not show any effort. A sense of rapport was developed between Jane and me over several years. This long-term exposure and engagement allowed this study to be successful and meaningful for both of us.

Jane's future teachers should be prepared and understand that developing rapport and trust with Jane will require meaningful time together. Personal and emotional sacrifices will have to be made in order to create a sense of trust. Special education students seem to possess an innate and accurate barometer of who cares and who does not. In other words, ensure that your feelings are genuine. In my opinion, if a teacher does not genuinely care for and respect the student he/she is working with, he/she is in the wrong field. Further, special education teachers should prepare themselves to be treated like a utility, good for one second, dismissed the next. We become good only if the student benefits quickly, and disposable when discipline is administered. It is important to remember, however, that the success achieved by the special education student becomes so rewarding that previous treatment and feelings become insignificant and forgotten.

What Have I Learned?

It is difficult to summarize all that I have learned through my work with Jane. I feel that I have learned a tremendous amount about myself, both as a person and as an instructor.

As an instructor, I feel that I have gained tremendous insight and knowledge into the disability of autism. The benefit of working alongside an individual with autism has allowed me to transform theory into meaningful practice. Without this opportunity to be

involved, I feel I would not have gained a greater understanding of the disability. The hands-on work with Jane has provided meaningful and concrete understanding for me. I understand that I still have plenty to learn about autism, but the study was a step in the right direction. This study provided knowledge in the area of teaching tools and strategies when working with autistic students, as well as an opportunity to test the strategies found in the literature. Moreover, research has also allowed me to test various strategies to try with autistic individuals and determine what will and will not work. This experience with Jane was incredibly beneficial for me and I hope it has helped Jane gain confidence and appreciation for her abilities. Furthermore, I have gained an appreciation for the abilities of autistic clients and what they bring to the teaching environment. It was wonderful to witness Jane's positive improvement in her basketball skills. It gave me a sense of pride that Jane was capable of achieving improvement, knowing that a small part of the improvement was due to my effort.

As an instructor it is imperative that I have taken away from this study the importance of individualizing programming for special needs students or any students who require it. If there were no individual programming for Jane, I believe the improvement demonstrated by her would not have taken place. Due to the wide range of ability levels in the classroom, teachers (including myself) may have to provide flexible and accommodating individual programs for their students.

In addition, I have learned not to underestimate or overestimate the abilities of the students. Provide time for fair evaluations to determine a suitable course of action for the student. Developing other teaching characteristics such as providing clear directions and being patient and flexible are other tools I will take away from this study.

As a person, I feel that I have learned what it feels like to have a younger sibling. I am the youngest of three boys and had always wondered what it would be like

to have a younger sibling. For about 6 months, I had the opportunity to interact and spend time with a younger, but not physically smaller, girl, who sort of felt like my sister. It would have been more beneficial for both our friendship and the study if we had lived closer together. Unfortunately, we only had the opportunity to spend 2-3 days a week together. It was enjoyable to have the experience of working with a younger friend, or can I say an "almost sister".

The most significant personal learning tool which I have gained from this study is the importance of putting life into perspective. I have learned to value the small things in life that I take for granted. Everyday activities which are instinctive for me are not the same for Jane. Jane has little control of what goes on in the world she lives in, such as controlling her body and mind to say and do things. Life becomes frustrating for Jane, and I wish I could do more to solve her frustration, but I cannot. Rather, I should learn from her experience and appreciate my life to the highest level. Most importantly, my experience with Jane has provided direction for my life. Our work together has provided the framework for me to begin working in the area of special education. I plan to find employment in the field of special education, trying to make a more productive and creative life for those that I will encounter. For this direction, I thank Jane immensely.

Implications

This study has demonstrated some of the features of structure that have proven useful in a physical education class for high-functioning autistic students. These features are physical organization, scheduling, and teaching methods. The key to using each of these features effectively is individualization. A classroom that is physically well organized and scheduled will not benefit students unless individual student strengths and needs are considered in the planning phase. A teacher who uses teaching methods such as prompts and reinforcement cannot do so effectively without assessing individual

student interest and learning styles. In order to achieve personal knowledge about a special education student, rapport is a necessity. How can one plan for a student when one really does not know the student? It should be remembered that trust and friendship between the student and the teacher make for a more enjoyable and successful environment.

An alternative method of assessing autistic or any special needs student should become a consideration for curriculum guidelines. Within the observation section, the movement profile was presented as an alternative for assessing movement performance. Even though the movement profile is an excellent tool for assessing performance, I question whether autistic students should be assessed in the physical education setting, or any other setting for that matter. How can educators assess an autistic student when they do not know what to assess? There is no cure for autism and very few autistic individuals can understand what is going on in their own minds. In some cases, autistic students do not have the ability to communicate what they are feeling. The question can be asked whether it is fair to assess the autistic student when the assessor does not know what is happening mentally or physically.

Furthermore, I feel I have provided a thorough description of teaching tools and strategies instructors can reference. Within my literature review, I have provided an abundance of information for games programming, evaluation, strategies, and so on, which instructors can access. This information is applicable to most students found in the school systems. Furthermore, a large section of the review of literature examined the disability of autism. This source of information can be used for those wishing to learn more about the disability or for students completing a related project.

Listed in point form below are strategies and tips on how to teach Jane in a physical education setting:

1. Intermittent spacing of practice: Avoid practicing on a daily basis. There exists the potential to overload Jane with information and new movement patterns. Jane may need breaks between practices for effective learning. If Jane is comfortable with daily movement, I definitely recommend that she receive some form of physical activity on a daily basis.

2. Consistent routines: Keep daily lesson plans as consistent as can be. Inform Jane of any changes in schedule.

3. Begin with lessons in which she achieved a high level of success: In order to foster a positive environment to work within, begin with activities that Jane will succeed in. A successful Jane is much more enjoyable and productive to work with than an unsuccessful Jane.

4. Skill teaching: Teaching activities should progress from least to most difficult during the lesson. Completing simple activities will provide Jane with a sense of confidence at the beginning of the lesson. Ensure that basic movement skills are learned before moving on to more challenging tasks.

5. Demonstrations: Demonstrations are extremely helpful teaching tips when working with Jane. Jane learns best through visual and tactile techniques; thus, be prepared to use them.

6. Exposure: Without the opportunity to practise, skill refinement will not come about. Unless Jane is provided with opportunities to practice, skill improvement will not occur.

7. Feedback: During the research project, I discovered that Jane learned best through the use of tactile, verbal, and visual forms of feedback. In some instances,

combinations of these forms of feedback were used effectively.

8. Environment: An important component of this study was fostering a positive environment to work within. It is important to determine what environment Jane worked best within. Best effort was visible in a quiet environment.

9. Providing positive reinforcement: Positive reinforcement was provided through vocal reinforcement or through tangible items such as food, extra time on the computer or on instruments.

10. Motor skills can be improved, and fine motor skills saw large improvements (dribbling); however, some of the gross motor activities such as traveling backwards or sideways were usually challenging.

11. Follow the suggested teaching strategy provided by the specific board; however the focus should be on developing appropriate sport skills. The focus must be on process rather than product.

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Appendix A
Pre-Movement Profile

LEGEND: a) dominant, frequent, sometimes, seldom, not present - describes frequency of action
: b) excellent, good, fair, poor - describes quality of action **where applicable

BODY AWARENESS:

1. Basic body function:
 - bend - seldom, fair
 - stretch - seldom, good
 - curl - seldom, fair
 - twist - sometimes, fair
2. Body Parts Can
 - a) bend, curl, stretch, twist - seldom, fair
 - b) lead an action - seldom, fair
 - c) meet and part - sometimes, fair
 - d) be used symmetrically & asymmetrically - sometimes, fair
3. Weightbearing
 - a) support (body parts taking weight) - legs dominant
 - b) transference of weight - poor, fair
 - c) balance - counterbalance - NA
 - counterresistance - NA
 - countertension - NA
4. Body Actions
 - a) locomotion - fair, dominant walker
 - b) elevation - fair, seldom
 - c) turns - fair, dominant direct pathways
 - d) gestures - frequent,
 - e) inversion - NA

SPACE AWARENESS

1. Personal Space- Kinesphere
 - a) 3-dimensional cross- poor, seldom
 - b) diagonals - poor, seldom
 - c) planes - poor, seldom
2. General Space:
 - a) levels- high -seldom
 - medium - frequent
 - low - seldom
 - b) pathways:
 - air - NA
 - floor- straight - dominant
 - angular - seldom
 - curved - seldom
 - twisted - seldom
 - c) extensions
 - large - seldom, fair
 - small - sometimes, fair
 - near - fair, frequent
 - far - poor, seldom
 - d) directions
 - forward - dominant, good
 - backward - seldom, poor
 - sideways - seldom, poor
 - up & down - seldom, poor

diagonals -seldom, poor

5. Body Shapes

- a) pin - seldom, poor
- b) wall - seldom, fair
- c) ball -seldom, poor
- d) screw - seldom, fair
- e) spikey - seldom, poor

6. Spatial Mass

7. Symmetrical &

Asymmetrical use of the body -sometimes

8. Motion and Stillness - sometimes, fair

9. Flight : NA

10. Manipulative &

Nonmanipulative - fair quality of performance

3. Space Words

over - fair, sometimes
 under - fair, seldom
 around - fair, sometimes
 near - fair, seldom
 far - fair, seldom
 towards -fair, sometimes
 away - good, sometimes
 from - good, sometimes
 onto - NA
 into - NA
 above - poor, seldom
 below - poor, seldom

4. Using Space:

explore - fair, sometimes
 penetrate - fair, seldom
 fill - NA
 surround - fair, sometimes
 replace - NA

5. Spatial Mass

EFFORT

1. Qualities:

- a) weight - firm (strong) - dominant
fine (light) - seldom
heavy - frequent
- b) time - sudden (fast) - frequent
sustained (slow) - seldom
- c) space - direct (straight) - dominant
flexible (wavy) - seldom
- d) flow - bound (stoppable) - sometimes
free (ongoing) - frequent

2. Emphasize one element

(cooperatively/competitively)

3. Emphasize two elements

4. Basic Effort Actions:

- a) thrust (sudden, firm, direct)- frequent
- b) slash (sudden, firm, flexible)- frequent
- c) flick (sudden, fine, flexible)- sometimes
- d) dab (sudden, fine, direct)- seldom
- e) press (sustained, firm, direct)- seldom
- f) wring (sustained, firm, flexible)-not present
- g) float (sustained, fine, flexible)- seldom
- h) glide (sustained, fine, direct) - seldom

RELATIONSHIPS

1. With objects

- a) manipulative: send- good
receive- fair
retain- fair
- b) nonmanipulative: obstacle - fair
extension -poor
targets - fair
apparatus - fair

2. With People

- a) alone - poor
- b) alone in a mass -poor
- c) partners, small groups, large groups - fair

copy - fair	question/answer - poor	near/far - poor
match - fair	action/reaction - fair	passing-fair
mirror - fair	dance together -good	dance to - good
contrast -poor	travel with-fair	above/below -poor
lead/follow -good	conversation -poor	sinking- poor
cannons - NA	unison- poor	send -fair
take turns -fair	merge/disperse -poor	receive - fair

d) intergroup relationships - poor

Appendix B

Post-Movement Study

LEGEND: a) dominant, frequent, sometimes, seldom, not present - describes frequency of action

: b) excellent, good, fair, poor - describes quality of action **where applicable

BODY AWARENESS:

SPACE AWARENESS

1. Basic body function:

- bend - seldom, fair
- stretch - sometimes, good
- curl - sometimes, good
- twist - sometimes, good

2. Body Parts Can

- a) bend, curl, stretch, twist - sometimes, good
- b) lead an action - sometimes, good
- c) meet and part - sometimes, good
- d) be used symmetrically & asymmetrically - sometimes, good

3. Weightbearing

- a) support (body parts taking weight) - legs dominant
- b) transference of weight - sometimes, good
- c) balance - counterbalance - NA
 - counterresistance - NA
 - countertension - NA

4. Body Actions

- a) locomotion - sometime runner, good
- b) elevation - seldom, fair
- c) turns - seldom, fair
- d) gestures - frequent
- e) inversion - NA

1. Personal Space- Kinesphere

- a) 3-dimensional cross- seldom, fair
- b) diagonals - sometimes, fair
- c) planes - seldom, fair

2. General Space:

- a) levels- high - sometimes, poor
- medium - frequent, good
- low - sometimes, fair
- b) pathways:
 - air - NA
 - floor- straight - dominant, excellent
 - angular - sometimes, good
 - curved - sometimes, good
 - twisted - sometimes, fair
- c) extensions
 - large - sometimes, fair
 - small - sometimes, fair
 - near - frequent, good
 - far - sometimes, fair
- d) directions
 - forward - dominant, excellent
 - backward - sometimes, good
 - sideways - sometimes, good
 - up & down - seldom, fair

diagonals -sometimes. good

5. Body Shapes

- a) pin - seldom, fair
- b) wall - seldom, fair
- c) ball - seldom, fair
- d) screw - seldom, fair
- e) spikey - seldom, fair

6. Spatial Mass

7. Symmetrical &

Asymmetrical use of the body - sometimes, good

8. Motion and Stillness - sometimes, good

9. Flight :

10. Manipulative &

Nonmanipulative -

3. Space Words

- over - sometimes, good
- under - sometimes, good
- around - sometimes, good
- near - sometimes, good
- far - sometimes, good
- towards - frequent, good
- away - sometimes, good
- from - sometimes, good
- onto - NA
- into - NA
- above - sometimes, fair
- below - seldom, fair

4. Using Space:

- explore - sometimes, good
- penetrate - sometimes, fair
- fill - NA
- surround - sometimes, good
- replace - NA

5. Spatial Mass

EFFORT

1. Qualities:

- a) weight - firm (strong) - dominant, excellent
fine (light) - sometimes, good
heavy - frequent, good
- b) time - sudden (fast) - frequent, good
sustained (slow) - sometimes, fair
- c) space - direct (straight) - dominant, excellent
flexible (wavy) - sometimes, good
- d) flow - bound (stoppable) - sometimes, fair
free (ongoing) - frequent, good

2. Emphasize one element

(cooperatively/competitively)

3. Emphasize two elements

4. Basic Effort Actions:

- a) thrust (sudden, firm, direct) - frequent, good
- b) slash (sudden, firm, flexible) - frequent, good
- c) flick (sudden, fine, flexible) - sometimes, fair
- d) dab (sudden, fine, direct) - sometimes, fair
- e) press (sustained, firm, direct) - seldom, fair
- f) wring (sustained, firm, flexible) - NA
- g) float (sustained, fine, flexible) - sometimes, fair
- h) glide (sustained, fine, direct) - sometimes, fair

RELATIONSHIPS

1. With objects

- a) manipulative: send- excellent
receive- good
retain- good
- b) nonmanipulative: obstacle - good
extension - good
targets - excellent
apparatus - good

2. With People

- a) alone - good
- b) alone in a mass - fair
- c) partners, small groups, large groups - good

copy- good	questions/answer - fair	near/far - good
match - good	action/reaction- good	passing- good
mirror - good	dance together- NA	dance to - NA
contrast - fair	travel with- good	above/below - fair
lead/follow - good	conversation - good	sinking- fair
cannons - NA	unison - good	send - excellent
take turns - fair	merge/disperse - fair	receive - good

d) intergroup relationships - fair

Appendix C

Movement Concepts

BODY AWARENESS

1. Basic functions: bend or curl, stretch or twist
2. Body parts:
 - Recognition (i) of the part used
 - (ii) of the part stressed
- B. Body parts can bend, curl, or stretch, twist
- C. Body parts can lead an action
- D. Body parts can meet and part
- E. Body parts can be used symmetrically or asymmetrically
3. Weightbearing:
 - A. Support - parts taking the weight
 - B. Transference of weight
 - C. Balance
4. Body actions:
 - A. Identification (i) locomotion
 - (ii) elevations
 - (iii) turns
- B. Gestures
- C. Holding or carrying actions which establish stillness
5. Body shapes: pin, wall, ball, screw
6. Symmetrical and asymmetrical uses of the body

EFFORT

1. Effort qualities of movement
 - A. Weight: firm (strong), fine touch (light), heavy
 - B. Time: sudden (fast), sustained (slow)
 - C. Space: direct (straight), flexible (wavy)
2. Emphasizing one element
3. Emphasizing two elements simultaneously
4. Basic effort actions

SPACE AWARENESS

1. Recognition of adaptation to space: general and personal
 - A. Recognition
 - B. Adaptation in general space
2. Orientation to personal space
 - A. The three dimensional cross
 - B. Diagonals
 - C. Planes
3. Levels: low, medium, high
4. Pathways in space: floor patterns: air patterns
5. Extensions in space: large, small, near, far

RELATIONSHIPS

1. With objects:
 - A. The manipulative relationship
 - B. The non-manipulative relationship (i) an obstacle
 - (ii) an extension
 - (iii) a target
2. With people:
 - A. Alone
 - B. Alone in a mass
 - C. Partners: cooperative, competitive
 - D. Groups
 - E. Intergroup relationships

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Appendix D Data Collection Sample

Tuesday November 28, 1997.

- special ed. worker joined us for workout. Worker - Sherri
- commented that Jane had improved her movement skills in many areas. ("her hand-eye coordination has improved substantially").

Footwork: footwork (walking, traveling sideways, side stepping) has improved, can open-close efficiently, movements are slow - little speed is demonstrated

- diagonals - beginning to become more efficient/comfortable with diagonal directions

Passing- chest pass is efficient, can change the quality of the pass when given instruction (can throw a pass hard and soft- depending on the distance)

- can move and complete a chest pass at the same time, moves in various directions
- beginning to step into chest pass- using more of her body to complete the pass
- can move backwards and complete pass

Bounce Pass- very poor ability to complete a bounce pass

- pass usually originates from above her head, has difficulty passing the ball from the chest area
- tends to slap the ball against the ground, rather than push the ball when completing a bounce pass
- quality/force of pass is poor/nonexistent

Dribbling- right hand dribble - movement is very positive, still has difficulty keeping head up when dribbling

- enjoys dribbling in a linear motion
- dribbling with non-dominant hand is weak, needs improvement
- changing directions when dribbling is poor, enjoys picking a line (large visible line) and dribbling over it - visual cue is important to Jane
- refuses to dribble when traveling backwards

Shooting - has difficulty determining the amount of force required when standing at different distances.

- comfortable shooting in front of the basket, angles are difficult for Jane to shot from

Rules: unable to understand that a player cannot walk while maintaining possession of the ball (can only take 2 steps)

- continues to dribble and stop, then dribble and stop again - difficulty maintaining possession of the ball.
- frustrating because she occasionally refuses to listen to me, however extremely receptive to instruction when special education worker is available. Exists a high level of rapport between student and worker. Worker knows what buttons to push.

February 15, 1998

- following one week at CPRI, Jane's disposition is much healthier and happier.
- there seems to be an unusual "aura" around her
- somewhat more receptive to instruction compared to previous sessions together, shows a dislike for instruction at the beginning of work-outs

Locomotion:

- as usual - Jane was comfortable moving in a forward direction using different methods of locomotion (walking, slow run, side-step)
- desires to change speed - demonstrates an ability to change speeds when she wants, however she claims she is tired and does not want to continue
- comfortable moving in various directions and pathways
- moving backwards poses some problems for Jane, she requires encouragement/ positive reinforcement to move in that direction
- moves slowly backwards-refuses to travel at a fast speed when traveling at a rapid speed

Bounce Pass- seems to have made some strides in skill development, mechanics behind the pass are improving- where the ball is being released from & the body parts involved

- however flicks the ball - rather than passing the ball

Dribbling- comfortable dribbling with dominant hand moving forwards and in various pathways/directions

- dribbling with non-dominant hand needs some improvement, Jane can move in various directions and pathways but slower compared to the dominant hand.
- Jane is beginning to understand why I am teaching her to use her body and free hand to protect the ball when dribbling
- Cognitively she is beginning to understand some of the basketball skills and when to use them
- changing hands when dribbling stationary is very efficient
- has some difficulty keeping her head up when dribbling
- refuses to make eye contact when she is completing a pass

Shooting - will shot from spots in which she receives a high level of success

- beginning to use her legs when she shots - ++++ sign
- combining activities - pass-move-shot = movement is slow, requires several prompts to complete activity

Insights:- Jane seems very sensitive to tactile stimulation, seems to enjoy it, use it as advantage to have her move.

- relate an activity to something, someone she likes-boys
- complete activities relating to beats, as in music beats, dribble in sync with beat (clap of hand)
- Lynn is a huge asset- Jane will move and work much harder when Lynn is there to encourage her

Appendix E Assessment Report

EDUCATIONAL PROGRESS REPORT: DISCHARGE

DATE: MARCH 30, 1998

STUDENT: JANE D.O.B. -

TEACHERS - RESIDENCE -

INSTRUCTIONAL THERAPIST: -

PRINCIPAL: CASE NUMBER:-

The provision of educational programs for students presenting behavioral and emotional disorders and/or developmental disabilities, who are in residence at C.P.R.I., Cottage 19, Genesis and Phoenix Units, is currently the responsibility of the London District Catholic School Board. Educational programs are now offered at St. Thomas Aquinas School. The opportunity for secondary school regular class integrations is available for students, who meet the appropriate secondary school age and placement requirements. Educational services for these adolescents were formerly provided at the Madeline Hardy - C.P.R.I., Thames Valley District School Board, London, Ontario.

Jane has attended the Phoenix Dual Diagnosis Behavioral Class at St. Thomas Aquinas from February 6, 1998 until March 13, 1998.

CLASSROOM OBSERVATIONS

Jane presented as a student with a number of strengths. She was able to be happy and pleasant, often displaying a sense of humour. Jane liked to participate in most activities. She demonstrated a relative strength in reading and general knowledge. Sam demonstrated an interest in a wide variety of information.

Jane worked on a variety of language arts activities including a spelling/grammar program, Spelling Words for Writing, which introduced words, used words in phrases and sentences, and included a variety of word recognition exercises. She completed part of the Superstars unit which included short stories on famous athletes with related questions. Jane required support to complete this activity, demonstrating difficulty with inferencing questions and many of the comprehension questions. She enjoyed writing stories and her journal on the computer.

risk taking associated with spelling new or unfamiliar vocabulary was challenging for . When was unsure of the spelling of a word she insisted on assistance for the correct form. . had just begun an adult literacy program, Laubach - Level 4, at the time of her discharge.

In Math, had been working on telling time to five minute intervals. This skill was not well-consolidated but her ability was enhanced by the use of counting aids. She had also begun a unit on the development of calendar skills and was experiencing success.

In addition to her individual programming, participated in a number of group activities. Our class begins its day with a morning chart including news, weather and calendar. enjoyed this activity, frequently volunteering information but she had difficulty with turn taking. A brief *Snack and Socialize* period takes place most days. was very helpful when taking her turn to prepare snack and cleaning up. During Social Skills, participated in short discussions and short role-plays. The topics have included: teasing, starting and maintaining a friendship. Our class worked on a unit called Our Body. took part in our discussions, labelled pictures orally and completed her worksheets with assistance. The class listened to the novel *Heidi* and was listening to *The Family Under the Bridge*. listened to our novels most of the time and was often able to answer questions.

During our twenty minute leisure time often chose to work independently on a limited number of activities including puzzles, colouring and games on the computer.

Our class outings have included a number of swimming trips, a visit to the central library, and trips to the mall to purchase classroom rewards and kitchen utensils. While behaviour was relatively appropriate, she frequently spoke to herself and others. required cues to modulate the volume of her voice for the setting she was in. was also observed to be uninhibited in directing conversation to persons that she encountered during community outings. benefitted from verbal prompts to focus her conversation and commentary on topics pertinent to the group discussion or subject of the outing. She walked daily to and from school and participated in a weekly swim. required supports to dress herself at the aquatic centre. In this situation she demonstrated anxious behaviour that would escalate and manifest itself in loud, impolite comments to other members of the facility, frequent self talk and verbalization of fears that people were hurting or were going to leave her. This behaviour decreased when her jewellery was left at the Phoenix residence but continued to be present at some level during each swimming trip.

Cooking was an activity wished to participate in but she had difficulty refraining from touching herself and food during our cooking sessions. consistently wanted to taste the ingredients and batter. She was able to effectively take turns preparing snack and clean up after. appeared to enjoy all art activities and would produce more samples after the art period was finished.

SOCIAL/BEHAVIOURAL DEVELOPMENT

Initially social presentation in our classroom fluctuated in that at times she was a happy student, with an engaging sense of humour, aware of her environment and demonstrating a caring

nature. At other times, [REDACTED] was less cooperative and viewed those around her unfavourably.

Behaviours that were noted as excessive or those which interfered with the learning of peers were targeted by her teacher as goal areas upon which to build alternative, more inviting replacement behaviours. The intent was to facilitate a more consistent presentation of [REDACTED] positive traits. This type of redirection encouraged [REDACTED], to utilize choice making to obtain positive social recognition and opportunities to engage in rewarding activities of her liking. Interfering behaviours included frequent verbal interruptions, monopolizing conversations, excessively loud speech and relating to peers in an authoritative, directing fashion.

Positive behavioural growth realized by [REDACTED] included an increase in her willingness to follow through and positively respond to teacher requests and direction, improved levels of conversational turn-taking, adapting to classroom routines in a new, classroom environment, and a decrease in initiating unsolicited conversation with persons encountered during walks and community outings. [REDACTED] responded well to verbal cues, positive attention and firm, judicious guidelines with respect to behavioural expectations and social deportment.

RECOMMENDATIONS

Academic

[REDACTED] might benefit from working on modified reading and math programs which target the acquisition of functional literacy and math skills necessary for daily living in the community.

[REDACTED] might benefit from a structured classroom placement providing clear and firm expectations and behavioural boundaries.

[REDACTED] might benefit from a school program which offers work placements, community awareness training and an individualized academic program.

[REDACTED] might benefit from receiving ongoing academic support, encouragement and verbal praise from her instructors.

Social/Behavioural Development

[REDACTED] might benefit from engaging in activities with small groups and working in co-operative learning situations.

[REDACTED] might benefit from opportunities to engage in activities, where she may model socially acceptable behaviours in the presence of typical, same age peers.

[REDACTED] might benefit from supervised extracurricular activities which develop her self-confidence, provide her with good role models and opportunities to develop appropriate peer relationships.

[REDACTED] might benefit from encouragement to engage in appropriate behaviours within the class and

